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Curriculum Vitae

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PROFESSIONAL APPOINTMENTS

7/12–	Professor of Computer Science, University of California, Irvine (UCI)
7/10–	Professor of Earth System Science (ESS), UCI
9/10–8/13	Vice Chair of Graduate Studies, ESS Dept., UCI
7/05–6/10	Associate Professor of Earth System Science, UCI
8/07–8/08	Visiting Researcher, Laboratoire de Glaciologie et Géophysique de l'Environnement (CNRS/LGGE), Grenoble, France
3/00–2/06	Affiliate Scientist, Climate and Global Dynamics (CGD) Division, National Center for Atmospheric Research (NCAR), Boulder, CO
7/99–6/05	Assistant Professor of Earth System Science, UCI
7/98–9/99	Visiting Scientist, Atmospheric Chemistry and CGD Divisions, NCAR
7/96–6/98	Postdoctoral Fellow, Advanced Studies Program, NCAR
8/91–6/96	Graduate Student Researcher, University of Colorado at Boulder, NCAR
1/91–6/91	Visiting Faculty, Physical Sciences, College of the Atlantic, Bar Harbor
11/88–12/90	Physicist, Technician, Smithsonian Astrophysical Observatory, Cambridge

PROFESSIONAL PREPARATION

Harvard University	Physics	A.B.	1990
University of Colorado at Boulder	Astrophys., Planetary, and Atmos. Sci.	M.S.	1993
University of Colorado at Boulder	Astrophys., Planetary, and Atmos. Sci.	Ph.D.	1996

ELEVATOR SPEECH

I am a physicist who studies climate to help piece together the climate puzzle so that as people alter Earth, intentionally or not, we better understand the likely outcomes. Rapid changes like vanishing snow and ice, blowing dust, and burning forests fascinate me most, because fast processes often indicate pressure points to which Earth is sensitive. Recently we discovered that nothing heats the planet faster than the pollution that darkens snow. This has helped spur the policy shift to reduce soot emissions. My current research includes desert dust and fire-emitted soot particulates, snowpack lifecycle, reflectance, and emission, wind-dispersal of nutrients and pathogens, wind-drag effects on deserts and oceans, wind-induced melt, and ice shelf hydrofracture. Better understanding of these processes will improve predictions of dust storms, disease endemicity, seasonal snowpack, and ice shelf disintegration. I also work to accelerate large-scale analysis techniques for data stored in the dominant geoscience data format, netCDF.

PUBLICATIONS

See complete, non-duplicative lists of my ISI-indexed articles at http://www.researcherid.com/rid/D-4485-2012 and http://orcid.org/0000-0003-0129-8024. Or search ISI (All-Databases option) for "*Author* = `zender, c*` AND *address* = `irvine` OR `boulder`". Current and former **group members** are indicated thusly: ***high school, **under-graduate, *graduate student, †post-doc, ‡researcher.

BOOKS

B1. **Zender, C. S.** (2017), NCO User Guide, ed. 4.6.4, Samurai Media, Hong Kong. (Amazon) (NB: I am not involved in the production of, and make no money from, this book. Samurai publishes and sells it as allowed by the GNU FDL license. The up-to-date PDF is freely available here.)

IN PEER-REVIEW

PR1. *__Gorris, M. E.__, L. A. Cat, M. Matlock, O. A. Ogunseitan, K. K. Treseder, J. T. Randerson, and **C. S. Zender** (2019), Coccidioidomycosis (Valley fever) case data for the southwestern United States, *In Review in Open Health Data*. (PDF)

PEER-REVIEWED JOURNAL ARTICLES PUBLISHED OR IN-PRESS

PJ83. *__Gorris, M. E.__, K. K. Treseder, **C. S. Zender**, and J. T. Randerson (2019), Expansion of coccidioidomycosis endemic regions in response to climate change in the United States during the 21st century. *In Press in GeoHealth*. (PDF)

PJ82. †__Dang, C.__, **C. S. Zender**, *__M. G. Flanner__ (2019), Intercomparison and improvement of two-stream shortwave radiative transfer schemes in Earth system models for a unified treatment of cryospheric surfaces, *The Cryosphere*, **13**(9), 2325–2343, doi:10.5194/tc-13-2325-2019. (PDF)

PJ81. Rasch, P. J., S. Xie, P.-L. Ma, and 32 co-authors including **C. S. Zender** (2019), An Overview of the Atmospheric Component of the Energy Exascale Earth System Model, *J. Adv. Model. Earth Syst.*, **11**, https://doi.org/10.1029/2019MS001629. (PDF)

PJ80. Tang, Q., S. A. Klein, S. Xie, W. Lin, J.-C. Golaz, E. L. Roesler, M. A. Taylor, P. J. Rasch, D. Bader, L. Berg, P. Caldwell, S. Giangrande, R. Neale, Y. Qian, L. Riihimaki, **C. S. Zender**, Y. Zhang, and X. Zheng (2019), Regionally refined test bed in E3SM atmosphere model version 1 (EAMv1) and applications for high-resolution modeling, *Geosci. Model Dev.*, **12**(7), 2679–-2706, https://doi.org/10.5194/gmd-12-2679-2019. (PDF)

PJ79. Golaz, J.-C., P. M. Caldwell, L. P. Van Roekel, M. R. Petersen, Q. Tang, J. D. Wolfe, and 75 co-authors including **C. S. Zender** (2019), The DOE E3SM coupled model version 1: Overview and evaluation at standard resolution, *J. Adv. Model. Earth Syst.*, **11**(7), 2089–2129, https://doi.org/10.1029/2018MS001603. (PDF)

PJ78. Evans, K. .J., J. H. Kennedy, D. Lu, M. M. Forrester, S. Price, J. Fyke, A. R. Bennett, M. Hoffman, M. Vizcaino, I. Tezaur, and **C. S. Zender** (2019), LIVVkit 2.1: Automated and extensible ice sheet model validation, *Geosci. Model Dev.*, **12**(3), 1067–1086, doi:10.5194/gmd-12-1067-2019. (PDF)

PJ77. *__Wang, W.__, __C. S. Zender__, D. van As, and Nathaniel B. Miller (2019), Spatial distribution of melt-season cloud radiative effects over Greenland: Evaluating satellite observations, reanalyses, and model simulations against in situ measurements, *J. Geophys. Res. Atm.*, **124**, doi:10.1029/2018JD028919. (PDF)

PJ76. *__Wang, W.__, __C. S. Zender__, and D. van As (2018), Temporal Characteristics of Cloud Radiative Effects on the Greenland Ice Sheet: Discoveries from Multiyear Automatic Weather Station Measurements, *J. Geophys. Res. Atm.*, **123**, doi:10.1029/2018JD028540. (PDF)

PJ75. Stephenson, S. R., *__W. Wang__, __C. S. Zender__, H. Wang, S. Davis, and P. J. Rasch (2018), Climatic Responses to Future Trans-Arctic Shipping, *Geophys. Res. Lett.*, **45**, doi:10.1029/2018GL078969. (PDF)

PJ74. †__Parajuli, S. P.__, and __C. S. Zender__ (2018), Projected changes in dust emissions and regional air quality due to the shrinking Salton Sea, *Aeolian Research*, **33**, 82–92, doi:10.1016/j.aeolia.2018.05.004. (PDF)

PJ73. Kuipers Munneke, P., A. J. Luckman, S. L. Bevan, E. Gilbert, C. J. P. P. Smeets, M. R. van den Broeke, *__W. Wang__, __C. S. Zender__, B. Hubbard, J. C. King, and B. Kulessa (2018), Intense winter surface melt on an Antarctic ice shelf, *Geophys. Res. Lett.*, **45**(15), doi:10.1029/2018GL077899. (PDF)

PJ72. *__Gorris, M. E.__, L. A. Cat, __C. S. Zender__, K. K. Treseder, and J. T. Randerson (2018), Coccidioidomycosis dynamics in relation to climate in the southwestern United States, *GeoHealth*, **2**(1), 6–24, doi:10.1002/2017GH000095. (PDF)

PJ71. †__Parajuli, S. P.__, and __C. S. Zender__ (2017), Connecting geomorphology to dust emission through high-resolution mapping of global land cover and sediment supply, *Aeolian Research*, **27**, 47–65, doi:10.1016/j.aeolia.2017.06.002. (PDF)

PJ70. Silver, J. D. and __C. S. Zender__ (2017), The compression-error trade-off for large gridded data sets, *Geosci. Model Dev.*, **10**, 413–423, doi:10.5194/gmd-10-413-2017. (PDF)

PJ69. __Zender, C. S.__ (2016), Bit Grooming: Statistically accurate precision-preserving quantization with compression, evaluated in the netCDF Operators (NCO, v4.4.8+), *Geosci. Model Dev.*, **9**, 3199–3211, doi:10.5194/gmd-9-3199-2016. (PDF)

PJ68. *__Wang, W.__, __C. S. Zender__, D. van As, P. C. J. P. Smeets, and M. R. van den Broeke (2016), A Retrospective, Iterative, Geometry-Based (RIGB) tilt correction method for radiation observed by automatic weather stations on snow-covered surfaces: application to Greenland, *The Cryosphere*, **10**, 727–741, doi:10.5194/tc-10-727-2016. (PDF)

PJ67. Yang, S., B. Xu, J. Cao, __C. S. Zender__, and M. Wang (2015), Climate effect of black carbon aerosol in a Tibetan Plateau Glacier, *Atmos. Environ.*, **111**, 71–78, doi:10.1016/j.atmosenv.2015.03.016. (PDF)

PJ66. Scanza, R. A., N. M. Mahowald, S. Ghan, __C. S. Zender__, J. F. Kok, X. Liu, Y. Zhang, and S. Albani (2015), Modeling dust as component minerals in the Community Atmosphere Model: development of framework and impact on radiative forcing, *Atmos. Chem. Phys.*, **15**, 537–561, doi:10.5194/acp-15-537-2015. (PDF)

PJ65. Albani, S., N. M. Mahowald, A. T. Perry, R. A. Scanza, __C. S. Zender__, N. G. Heavens, V. Maggi, J. F. Kok, and B. L. Otto-Bliesner (2014), Improved dust representation in the Community Atmosphere Model, *J. Adv. Model. Earth Syst.*, **6**, 541–570, doi:10.1002/2013MS000279. (PDF)

PJ64. *__Tosca, M. G.__, J. T. Randerson, and __C. S. Zender__ (2013), Global impact of smoke aerosols from landscape fires on climate and the Hadley circulation, *Atmos. Chem. Phys.*, **13**(10), 5227–5241, doi:10.5194/acp-13-5227-2013. (PDF)

PJ63. Bond, T. C., and 30 co-authors including __C. S. Zender__ (2013), Bounding the role of black carbon in the climate system: A scientific assessment, *J. Geophys. Res. Atm.*, **118**, doi:10.1002/jgrd.50171. (PDF)

PJ62. __Zender, C. S.__ (2012), News & Views: Snowfall brightens Antarctic future, *Nature Clim. Change*, **2**(11), 770–771, doi:10.1038/nclimate1730. (PDF)

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PJ60. *__Han, Q.__, __C. S. Zender__, J. K. Moore, C. S. Buck, Y. Chen, A. Johansen, and C. I. Measures (2012), Global estimates of mineral dust aerosol iron and aluminum solubility that account for particle size using diffusion-controlled and surface-area-controlled approximations, *Global Biogeochem. Cycles*, **26**, GB2038, doi:10.1029/2011GB004816. (PDF)

PJ59. †__Allen, R. J.__, S. C. Sherwood, J. R. Norris, and __C. S. Zender__ (2012), The Equilibrium Response to Idealized Thermal Forcings in a Comprehensive GCM: Implications for Recent Tropical Expansion, *Atmos. Chem. Phys.*, **12**, 4795–4816, doi:10.5194/acp-12-4795-2012. (PDF)

PJ58. __Zender, C. S.__, ***__A. G. Krolewski__, *__M. G. Tosca__, and J. T. Randerson (2012), Tropical biomass burning smoke plume size, shape, reflectance, and age based on 2001–2009 MISR imagery of Borneo, *Atmos. Chem. Phys.*, **12**, 3437–3454, doi:10.5194/acp-12-3437-2012. (HTML, PDF)

PJ57. †__Wang, X.__, C. de Linage, J. Famiglietti, and __C. S. Zender__ (2011), Gravity Recovery and Climate Experiment (GRACE) detection of water storage changes in the Three Gorges Reservoir of China and comparison with *in situ* measurements, *Water Resour. Res.*, **47**, W12502, doi:10.1029/2011WR010534. (PDF)

PJ56. Huneeus, N., M. Schulz, Y. Balkanski, J. Griesfeller, S. Kinne, J. Prospero, S. Bauer, O. Boucher, M. Chin, F. Dentener, T. Diehl, R. Easter, D. Fillmore, S. Ghan, P. Ginoux, *__A. Grini__, L. Horowitz, D. Koch, M. C. Krol, W. Landing, X. Liu, N. Mahowald, R. Miller, J.-J. Morcrette, G. Myhre, J. E. Penner, J. Perlwitz, P. Stier, T. Takemura, and __C. S. Zender__ (2011), Global dust model intercomparison in AeroCom phase I, *Atmos. Chem. Phys.*, **11**(15), 7781–7816, doi:10.5194/acp-11-7781-2011. (HTML, PDF)

PJ55. †__Allen, R. J.__, and __C. S. Zender__ (2011), Forcing of the Arctic Oscillation by Eurasian Snow Cover, *J. Climate*, **24**(24), 6528–6539, doi:10.1175/2011JCLI4157.1. (PDF)

PJ54. †__Allen, R. J.__, and __C. S. Zender__ (2011), The role of eastern Siberian snow and soil moisture anomalies in quasi-biennial persistence of the Arctic and North Atlantic Oscillations, *J. Geophys. Res. Atm.*, **116**, D16125, doi:10.1029/2010JD015311. (PDF)

PJ53. †__Wang, X.__, and __C. S. Zender__ (2011), Arctic and Antarctic diurnal and seasonal variations of snow albedo from multiyear Baseline Surface Radiation Network measurements, *J. Geophys. Res. Earth Surf.*, **116**, F03008, doi:10.1029/2010JF001864. (PDF)

PJ52. *__Tosca, M. G.__, J. T. Randerson, __C. S. Zender__, D. L. Nelson, D. J. Diner, and J. A. Logan (2011), Dynamics of fire plumes and smoke clouds associated with peat

and deforestation fires in Indonesia, *J. Geophys. Res. Atm.*, **116**, D08207, doi:10.1029/2010JD015148. (PDF)

PJ51. Mahowald, N. M., S. Kloster, S. Engelstaedter, J. K. Moore, S. Mukhopadhyay, J. R. McConnell, S. Albani, S. C. Doney, A. Bhattacharya, M. A. J. Curran, *__M. G. Flanner__, F. M. Hoffman, D. M. Lawrence, K. Lindsay, P. A. Mayewski, J. Neff, D. Rothenberg, E. Thomas, P. E. Thornton, and **C. S. Zender** (2010), Observed 20th century desert dust variability: impact on climate and biogeochemistry, *Atmos. Chem. Phys.*, **10**, 12585–12628, doi:10.5194/acp-10-10875-2010. (PDF)

PJ50. †**Allen, R. J.**, and **C. S. Zender** (2010), The effects of continental-scale snow albedo anomalies on the wintertime Arctic Oscillation, *J. Geophys. Res. Atm.*. **115**, D23105, doi:10.1029/2010JD014490. (PDF)

PJ49. *__Han, Q.__, and **C. S. Zender** (2010), Desert dust aerosol age characterized by mass-age tracking of tracers, *J. Geophys. Res. Atm.*, **115**, D22201, doi:10.1029/2010JD014155. (PDF)

PJ48. †**Wang, X.**, and **C. S. Zender** (2010), Constraining MODIS snow albedo at large solar zenith angles: Implications for the surface energy budget in Greenland, *J. Geophys. Res. Earth Surf.*, **115**, F04015, doi:10.1029/2009JF001436. (PDF)

PJ47. *__Tosca, M. G.__, J. T. Randerson, **C. S. Zender**, *__M. G. Flanner__, and P. J. Rasch (2010), Do biomass burning aerosols intensify drought in equatorial Asia during El Niño?, *Atmos. Chem. Phys.*, **10**(8), 3515–3528, doi:10.5194/acp-10-3515-2010. (HTML, PDF)

PJ46. *__Capps, S. B.__, and **C. S. Zender** (2010), Estimated global ocean wind power potential from QuikSCAT observations, accounting for turbine characteristics and siting, *J. Geophys. Res. Atmos.*, **115**, L09102, doi:10.1029/2009JD012679. (PDF)

PJ45. †**Wang, X.**, and **C. S. Zender** (2010), MODIS snow albedo bias at high solar zenith angle relative to theory and to *in situ* observations in Greenland, *Rem. Sens. Environ.*, **114**(3), 563–575, doi:10.1016/j.rse.2009.10.014. (PDF)

PJ44. Krishnamurthy, A., J. K. Moore, N. M. Mahowald, ‡**C. Luo**, and **C. S. Zender** (2010), Impacts of atmospheric nutrient inputs on marine biogeochemistry, *J. Geophys. Res. Biogeosci.*, **115**, G01006, doi:10.1029/2009JG001115. (PDF)

PJ43. Gallet, J.-C., F. Dominé, **C. S. Zender**, and G. Picard (2009), Measurement of the specific surface area of snow using infrared reflectance in an integrating sphere at 1310 and 1550 nm, *The Cryosphere*, **3**(2), 167–182, doi:10.5194/tc-3-167-2009. (HTML, PDF)

PJ42. Krishnamurthy, A., J. K. Moore, N. M. Mahowald, ‡**C. Luo**, S. Doney, K. Lindsay, and **C. S. Zender** (2009), Impacts of increasing soluble iron and nitrogen deposition on ocean biogeochemistry, *Global Biogeochem. Cycles*, **23**, GB3016, doi:10.1029/2008GB003440. (PDF)

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PJ39. *__Wang, D. L.__, __C. S. Zender__, and S. F. Jenks (2009), Efficient Clustered Server-side Data Analysis Workflows using SWAMP, *Earth Sci. Inform.*, **2**(3), 141–155, doi:10.1007/s12145-009-0021-z. (PDF)

PJ38. *__Capps, S. B.__, and __C. S. Zender__ (2008), Observed and CAM3 GCM Sea Surface Wind Speed Distributions: Characterization, Comparison, and Bias Reduction, *J. Climate*, **21**(24), 6569–6585, doi:10.1175/2008JCLI2374.1. (PDF)

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PJ36. *__Han, Q.__, J. K. Moore, __C. S. Zender__, C. Measures, and D. Hydes (2008), Constraining Oceanic Dust Deposition Using Surface Ocean Dissolved Al, *Global Biogeochem. Cycles*, **22**, GB2003, doi:10.1029/2007GB002975. (PDF)

PJ35. McConnell, J. R., P. R. Edwards, G. L. Kok, *__M. G. Flanner__, __C. S. Zender__, E. S. Saltzman, J. R. Banta, D. R. Pasteris, M. M. Carter, and J. D. W. Kahl (2007), 20th-Century Industrial Black Carbon Emissions Altered Arctic Climate Forcing, *Science*, **317**(5843), 1381–1384, doi:10.1126/science.1144856. (PDF)

PJ34. __Zender, C. S.__, and ‡__H. J. Mangalam__ (2007), Scaling Properties of Common Statistical Operators for Gridded Datasets, *Int. J. High Perform. Comput. Appl.*, **21**(4), 485–498, doi:10.1177/1094342007083802. (PDF)

PJ33. Krishnamurthy, A., J. K. Moore, __C. S. Zender__, and ‡__C. Luo__ (2007), Effects of Atmospheric Inorganic Nitrogen Deposition on Ocean Biogeochemistry. *J. Geophys. Res.*, **112**, G02019, doi:10.1029/2006JG000334. (PDF)

PJ32. Talamantes, J., S. Behseta, and __C. S. Zender__ (2007), Fluctuations in Climate and Incidence of Coccidioidomycosis in Kern County, California: a review, *Ann. N.Y. Acad. Sci.*, **1111**, 73–82, doi:10.1196/annals.1406.028. (PDF)

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PJ30. ‡__Luo, C.__, __C. S. Zender__, †__H. Bian__, and S. Metzger (2007), Role of ammonia chemistry and coarse mode aerosols in global climatological inorganic aerosol distributions, *Atmos. Environmen.*, **41**(12), 2510–2533, doi:10.1016/j.atmosenv.2006.11.030. (PDF)

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PJ28. Randerson, J. T., H. Liu, *__M. G. Flanner__, S. D. Chambers, Y. Jin, P. G. Hess, G. Pfister, M. C. Mack, K. K. Treseder, L. R. Welp, F. S. Chapin, J. W. Harden, M. L. Goulden, E. Lyons, J. C. Neff, E. A. G. Schuur and __C. S. Zender__ (2006), The Impact of Boreal Forest Fire on Climate Warming, *Science*, **314**(5802), 1130–1133, doi:10.1126/science.1132075. (PDF)

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PJ26. Washington, R., M. C. Todd, G. Lizcano, I. Tegen, C. Flamant, I. Koren, P. Ginoux,

S. Engelstaedter, C. S. Bristow, **C. S. Zender**, A. S. Goudie, A. Warren, J. M. Prospero (2006), Links between topography, wind, deflation, lakes and dust: The case of the Bodélé Depression, Chad, *Geophys. Res. Lett.*, **33**(9), L09401, doi:10.1029/2006GL025827. (PDF)

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PJ17. **Zender, C. S.**, R. Miller, and I. Tegen (2004), Quantifying Mineral Dust Mass Budgets: Terminology, Constraints, and Current Estimates, *Eos Trans. AGU*, **85**(48), 509–512, doi:10.1029/2004EO480002. (PDF)

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IM3. **Zender, C. S.** and R. L. Miller (2004): Natural and Anthropogenic Mineral Dust: Systematic Terminology and Current Mass Budget Estimates. Presented to Joint American Geophysical Union and Canadian Geophysical Union Spring Meeting, Montreal, Canada, May 17–21, 2004. (PDF)

IM2. **Zender, C. S.**, J. Famiglietti, F. Kuester, R. Pajarola, and F. Wessel (2004): Earth System Modeling Facility: Linking Climate to Cal-(IT)^2 and OptIPuter. Presented to the Third Cal-(IT)^2 All-hands Meeting, University of California at San Diego, La Jolla, CA, April 12, 2004. (PDF)

IM1. **Zender, C. S.** and †**H. Bian** (2004): Mineral dust aerosol and tropospheric ozone: Sensitivity to season, species, uptake rate, and chemical composition. Presented to the European Geosciences Union (EGU) Spring Meeting, Nice, France, April 26–30, 2004.

ACCEPTED PRESENTATIONS AT PROFESSIONAL MEETINGS & WORKSHOPS

(Presented by C. Zender unless noted) (**author** is/was in our group: ***high school, **undergraduate, *graduate student, †post-doc, ‡researcher)

CM181. *Upcoming and subject to change:* Tang, Q., S. A. Klein, S. Xie, W. Lin, J.-C. Golaz, E. L. Roesler, M. A. Taylor, P. J. Rasch, D. Bader, L. Berg, P. Caldwell, S. Giangrande, R. Neale, Y. Qian, L. Riihimaki, **C. S. Zender**, Y. Zhang, and X. Zheng (2019), Regionally refined test bed in E3SM atmosphere model version 1 (EAMv1) and applications for high-resolution modeling, Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2019. *Eos Trans. AGU*, **100**(54), Fall Meet. Suppl., Abstract fxm. (PDF)

CM180. *Past:* ***Gorris, M. E.**, **Zender, C. S.**, K. K. Treseder, J. T. Randerson, and L. A. Cat, (2019): Using climate and environmental data to understand Valley fever disease dynamics, Presented by M. Gorris to the Bridging Regional Ecology, Aerosolized Toxins, & Health Effects (BREATHE) Workshop, University of California, Riverside, May 17, 2019. (PDF)

CM179. ***Gorris, M. E.**, A. Salamone, W. Clifford, **C. S. Zender**, K. K. Treseder, and J. T. Randerson (2019), Environmental niche modeling of *Coccidioides* spp. in Washington State. Presented by M. Gorris to the Cocci Study Group (CSG) Meeting, Sacramento, CA, April 5, 2019. (PDF)

CM178. Davis, E. R. **C. S. Zender**, D. Arctur, K. O'Brien, A. Jelenak, D. A. Santek, M. J. Dixon, T. Whiteaker, and K. Yang (2019), NetCDF-CF: Supporting Earth System Science with Data Access, Analysis, and Visualization. Presented by E. Davis to the EarthCube All Hands Meeting, Denver, CO, June 12–14, 2019. (PDF)

CM177. ***Gorris, M.**, K. K. Treseder, **C. S. Zender**, W. Clifford, A. Salamone, H. N. Oltean, and J. T. Randerson (2019), Coccidioidomycosis climate niche model for predicting current and future endemic regions in the United States through the 21st Century and applications to environmental soil sampling, Presented by M. Gorris at the 99th American Meteorological Society (AMS) meeting 10th Conference on Environment and Health, Phoenix, AZ, January 6–10, 2019. (PDF)

CM176. Jelenak, A., P. Leonard, and **C. S. Zender** (2019): NASA Dataset Interoperability Recommendations for Earth Science, Presented by A. Jelenak to the Earth Science Information Partners (ESIP) 2019 Winter Meeting, Bethesda, MD, January 15–17, 2019. (PDF)

CM175. **Zender, C. S.** (2018): NCO-JSON: A Flexible, Complete JavaScript Object Notation for netCDF, Presented to the American Geophysical Union Fall Meeting, Washington, DC, December 10–14, 2018. *Eos Trans. AGU*, **98**(54), Fall Meet. Suppl., Abstract IN31B-30. (iPoster PDF)

CM174. *†**Wang, W.**, **C. S. Zender**, D. van As, and Nathaniel B. Miller (2018), Spatial Discrepancies in Cloud Radiative Effects Between Large-scale Datasets and In-situ Measurements over Greenland, Presented by W. Wang to the American Geophysical Union Fall Meeting, Washington, DC, December 10–14, 2018. *Eos Trans. AGU*, **98**(54), Fall Meet. Suppl., Abstract A52B-04. (PDF)

CM173. *__Gorris, M.__, **C. S. Zender**, J. T. Randerson, D. W. Goodsman, C. Xu, and C. Man ore (2018), Expanding a seasonal forecast of US West Nile virus for 21st century disease projections, Presented by M. Gorris to the American Geophysical Union Fall Meeting, Washington, DC, December 10–14, 2018. *Eos Trans. AGU*, **98**(54), Fall Meet. Suppl., Abstract GH14A-06. (PDF)

CM172. †**Dang, C.**, **C. S. Zender**, *__M. G. Flanner__, B. Light, and A. K. Turner (2018), A unified snow and sea ice radiative transfer algorithm in Earth System Models, Presented by C. Dang to the American Geophysical Union Fall Meeting, Washington, DC, December 10–14, 2018. *Eos Trans. AGU*, **98**(54), Fall Meet. Suppl., Abstract A53I-2608 (PDF)

CM171. *__Laffin, M.__, **C. S. Zender**, and S. Singh (2018), Foehn Winds on Larsen C Ice Shelf During Polar Night: Impacts on the Surface Energy Budget and Melt, Presented by M. Laffin to the American Geophysical Union Fall Meeting, Washington, DC, December 10–14, 2018. *Eos Trans. AGU*, **98**(54), Fall Meet. Suppl., Abstract A51P-2440. (PDF)

CM170. *__Wolff, Z.__ and **C. S. Zender** (2018), Impacts of spectrally resolved emissivity on the surface energy balance and state of Arctic sea ice, Presented by Z. Wolff to the American Geophysical Union Fall Meeting, Washington, DC, December 10–14, 2018. *Eos Trans. AGU*, **98**(54), Fall Meet. Suppl., Abstract A53I-2609. (PDF)

CM169. Huang, X., X. Chen, Y.-H. Chen, M. Flanner, P. Yang, W. Lin, and **C. S. Zender** (2018): Some general considerations about the surface-atmosphere radiative coupling in the earth system model, Presented by X. Huang to the DOE Modeling PI and Energy Exascale Earth System Model (E3SM) All-Hands Meeting, Potomac, MD, November 5–9, 2018. (PDF)

CM168. Huang, X., X. Chen, Y.-H. Chen, M. Flanner, P. Yang, W. Lin, and **C. S. Zender** (2018): Improved Representation of Surface-Atmosphere Longwave Coupling and Its Impact on the Simulated Polar Climate, Presented by X. Huang to the DOE Modeling PI and Energy Exascale Earth System Model (E3SM) All-Hands Meeting, Potomac, MD, November 5–9, 2018. (PDF)

CM167. *__W. Wang__, Stephenson, S. R., **C. S. Zender**, H. Wang, S. Davis, and P. J. Rasch (2018), Climatic Responses to Future Trans-Arctic Shipping, Presented to the DOE Modeling PI and Energy Exascale Earth System Model (E3SM) All-Hands Meeting,

Potomac, MD, November 5–9, 2018. (PDF)

CM166. †C. Dang and **C. S. Zender** (2018): A unified snow and sea-ice radiative transfer algorithm for Earth System Models, Presented to the DOE Modeling PI and Energy Exascale Earth System Model (E3SM) All-Hands Meeting, Potomac, MD, November 5–9, 2018. (PDF)

CM165. *__Wolff, Z.__, and **C. S. Zender** (2018): Impacts of spectrally resolved emissivity on the surface energy balance and state of Arctic sea ice, Presented to the DOE Modeling PI and Energy Exascale Earth System Model (E3SM) All-Hands Meeting, Potomac, MD, November 5–9, 2018. (PDF)

CM164. **Zender, C. S.** (2018), NCO-JSON: JavaScript Object Notation (JSON) for netCDF. Presented to the Earth Science Information Partners (ESIP) 2018 Summer Meeting, Tucson, AZ, July 17–20, 2018. (PDF)

CM163. **Zender, C. S.** and D. Lee (2018), CF-2 Group Proposal. Presented to the Earth Science Information Partners (ESIP) 2018 Summer Meeting, Tucson, AZ, July 17–20, 2018. (PDF)

CM162. **Zender, C. S.**, †**W. Wang**, *__M. K. Laffin__, and ‡**A. Saini** (2018): The JAWS Workflow to harmonize polar Automatic Weather Station data: Status and Early Results. Presented to the 2018 Workshop on Antarctic Meteorology and Climate (WAMC), Madison, WI, 16–18 July 2018. (PDF)

CM161. *__Laffin, M. K.__, and **C. S. Zender** (2018): Using AWS and MERRA-2 data to estimate the climatology and impact of polar night foehn wind on Larsen C Ice Shelf. Presented by M. Laffin to the 2018 Workshop on Antarctic Meteorology and Climate (WAMC), Madison, WI, 16–18 July 2018. (PDF)

CM160. Lee, D. and **Zender, C. S.** (2018), CF-2 Group Proposal. Presented by D. Lee to the 2018 netCDF-CF Workshop, National Centre for Atmospheric Science (NCAS), University of Reading, Reading, UK, June 19–20, 2018. (PDF)

CM159. Davis, E. R. **C. S. Zender**, D. Arctur, K. O'Brien, A. Jelenak, D. A. Santek, M. J. Dixon, T. Whiteaker, K. Yang, J. Yu, M. Hedley, and A. Leadbetter (2018), NetCDF-CF: Supporting Earth System Science with Data Access, Analysis, and Visualization. Presented by E. Davis to the EarthCube All Hands Meeting, Washington, DC, June 6–8, 2018. (PDF)

CM158. *__Gorris, M. E.__, K. K. Treseder, **C. S. Zender**, and J. T. Randerson (2018), The effects of climate change on coccidioidomycosis endemic regions in the United States. Presented by M. Gorris to the Cocci Study Group (CSG) Meeting, Fresno, CA, April 14, 2018. (PDF)

CM157. *__Wang, W.__, and **C. S. Zender** (2018), Contributions of clouds to Greenland's surface melt: multi-year observations from automatic weather stations. Presented by W. Wang to the European Geophysical Union (EGU) General Assembly, Vienna, Austria, April 8–13, 2018. *Geophys. Res. Abstr.*, **12**, Abstract EGU2018-5609 (PDF)

CM156. Kuipers-Munneke, P., A. Luckman, S. Bevan, E. Gilbert, P. Smeets, M. van den Broeke, *__W. Wang__, **C. S. Zender**, B. Hubbard, A. Orr, and J. King (2018), Winter in Antarctica: dark, windy, and …wet? The impact of present-day and future wintertime surface melting. Presented by P. Kuipers-Munneke to the European Geophysical Union General Assembly, Vienna, Austria, April 8–13, 2018. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract EGU2018-7838. (PDF)

CM155. **Zender, C. S.** (2017), New Approaches to Analyze Big Geoscientific Datasets. Primary Convener and Panelist. Presented to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017.

CM154. **Zender, C. S.** and J. D. Silver (2017), Bit-Grooming: Shave Your Bits with Razor-sharp Precision. Presented to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract IN11B-0037. (PDF)

CM153. *__Wang, W.__, and **C. S. Zender** (2017), A stabilizing feedback between cloud radiative effects and Greenland surface melt: verification from multi-year automatic weather station measurements. Presented to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract A51E-2117 (PDF)

CM152. *__Gorris, M. E.__, L. A. Cat, **C. S. Zender**, K. K. Treseder, and J. T. Randerson (2017), The influence of current and future climate on the spatial distribution of coccidioidomycosis in the southwestern United States. Presented by M. Gorris to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract GC-23E. (PDF)

CM151. Davis, E. R., **C. S. Zender**, D. Arctur, K. O'Brien, A. Jelenak, D. A. Santek, M. J. Dixon, T. Whiteaker, and K. Yang (2017), NetCDF-CF: Supporting Earth System Science with Data Storage, Analysis, and Visualization. Presented by E. Davis to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. (PDF)

CM150. Kuipers-Munneke, P., A. Luckman, S. Bevan, E. Gilbert, P. Smeets, M. van den Broeke, *__W. Wang__, **C. S. Zender**, B. Hubbard, A. Orr, and J. King (2017), Winter in Antarctica: dark, cold, windy, and …wet? Observations of extensive wintertime surface melt confirmed by weather modelling. Presented by B. Hubbard to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract C51B-0982. (PDF)

CM149. **Zender, C. S.** (2017): CF2-Group: Draft Climate/Forecast Conventions for Hierarchical Data+Metadata. Presented to the Earth Science Data Systems Working Group (ESDSWG) Dataset Interoperability Working Group (DIWG). Online meeting, September 20, 2017. (PDF)

CM148. Evans K., J. Kennedy, M. M. Forrester, D. Lu, S. Price, J. Fyke, **C. S. Zender**, M. Vizcaino, I. Tezaur (2017): A robust and extensible toolkit for ice sheet model validation. Presented by K. Evans to the Society for Industrial and Applied Mathematics (SIAM) Conference on Mathematical and Computational Issues in the Geosciences. Erlangen, Germany, September 11–14, 2017. (PDF)

CM147. *__Gorris, M. E.__, L. A. Cat, **C. S. Zender**, K. K. Treseder, and J. T. Randerson (2017), The Effects of Climate on Valley Fever Incidence in the Southwestern United States. Presented by M. Gorris to the Cocci Study Group (CSG) Meeting, Fresno, CA, August 9, 2017. (PDF)

CM146. **Zender, C. S.** (2017), New Methods to Generate, Regrid, and Split Climate Data. Presented to the DOE Accelerated Climate Modeling for Energy (ACME) All-Hands Meeting, Potomac, MD, June 5–7, 2017. (PDF)

CM145. Davis, E. R., **C. S. Zender**, D. Arctur, A. Jelenak, D. A. Santek, M. Dixon, and

T. Whiteaker (2017), NetCDF-CF: Supporting Earth System Science with Data Storage, Analysis, and Visualization. Presented by E. Davis to the EarthCube All-Hands Meeting, Seattle, WA, June 7–9, 2017. (PDF)

CM144. **Mao, J., D. LeBauer, and **C. S. Zender** (2017), The TERRA-REF Hyperspectral Imagery Workflow. Presented by J. Mao to the Phenome 2017 Conference, Tucson, AZ, February 10–14, 2017. (PDF)

CM143. *Gorris, M. E., L. A. Cat, J. T. Randerson, **C. S. Zender**, and K. K. Treseder (2017), The spatiotemporal relationship between climate and valley fever in the southwestern United States. Presented by M. Gorris at the 97th American Meteorological Society (AMS) Meeting 8th Conference on Environment and Health, Seattle, WA, January 22–26, 2017. (PDF)

CM142. **Zender, C. S.** (2016), Death of Darkness: Artificial Sky Brightness in the Anthropocene. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 12–16, 2016. *Eos Trans. AGU*, **96**(54), Fall Meet. Suppl., Abstract OS31A-1744. (PDF)

CM141. *Wang, W., **C. S. Zender**, and D. van As (2016), Cloud-induced stabilization of Greenland surface melt. Presented by W. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 12–16, 2016. *Eos Trans. AGU*, **96**(54), Fall Meet. Suppl., Abstract AS31A-1744. (PDF)

CM140. **Zender, C. S.** and J. D. Silver (2016), Bit Grooming: Put Climate Data on a Diet with Precision-Preserving Lossy Compression. Presented to the DOE Accelerated Climate Modeling for Energy (ACME) PI Meeting, Denver, CO, November 9–11, 2016. (PDF)

CM139. Davis, E. R., **C. S. Zender**, D. Arctur, A. Jelenak, D. A. Santek, K. M. O'Brien, and M. Dixon (2016), Advancing netCDF-CF for the Geoscience Community. Presented by E. Davis to the European Geosciences Union, Vienna, Austria, April 17–22, 2016. Abstract EGU2016-11351. (PDF)

CM138. *Gorris, M. E, L. A. Cat, J. T. Randerson, **C. S. Zender**, and K. K. Treseder (2016), Climate Drivers and Coccidioidomycosis Incidence at the Regional Scale. Presented by M. Gorris to the Cocci Study Group (CSG) Meeting, Fresno, CA, April 9, 2016. (PDF)

CM137. **Zender, C. S.** (2016), Regrid Curvilinear, Rectangular, and Unstructured Data (CRUD) with ncremap, a new netCDF Operator. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, April 6–8, 2016. (PDF)

CM136. **Zender, C. S.** and P. Leonard (2016), NASA ESDS Dataset Interoperability Working Group. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, April 6–8, 2016. (PDF)

CM135. **Zender, C. S.**, P. Leonard, E. Armstrong, M. J. Brodzik, J. Glassy, A. Jelenak, S. J. S. Khalsa, W. Yang (2016), Guidelines for swath structures in Earth science products. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, April 6–8, 2016. (PDF)

CM134. Davis, E. R., **C. S. Zender**, D. Arctur, A. Jelenak, D. A. Santek, K. M. O'Brien, and M. Dixon (2016), Advancing netCDF-CF for the Geoscience Community. Presented by E. Davis to the 32nd American Meteorological Society (AMS) Conference on Environmental Information Processing Technologies New Orleans, LA, January 11–14,

2016. Abstract 13B.2. (PDF)

CM133. **Zender, C. S.** (2015), Regrid Curvilinear, Rectangular, and Unstructured Data (CRUD) with ncremap, a new netCDF Operator. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 14–18, 2015. *Eos Trans. AGU*, **95**(54), Fall Meet. Suppl., Abstract IN31A-1744. (PDF)

CM132. *__Wang, W.__ and **C. S. Zender** (2015), Correcting Radiation Measured by Tilted Automatic Weather Stations: Application to Greenland. Presented by W. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 14–18, 2015. *Eos Trans. AGU*, **95**(54), Fall Meet. Suppl., Abstract C41B-0697. (PDF)

CM131. **Zender, C. S.**, ‡**P. Vicente**, and *__W. Wang__ (2015), Use netCDF Operators (NCO) to Improve Data Interoperability and Usability. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2015. (PDF)

CM130. **Zender, C. S.** and P. Leonard (2015), NASA ESDS Dataset Interoperability Working Group. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2015. (PDF)

CM129. **Zender, C. S.**, P. Leonard, E. Armstrong, S. Berrick, M. J. Brodzik, S. Doman Bennett, S. J. S. Khalsa, H. Lee, D. Marinelli, J. Plutchak, M. Yang, W. Yang (2015), Guidelines for creating grid structures in Earth science product files. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2015. (PDF)

CM128. *__Wang, W.__ and **C. S. Zender** (2014), Improving Estimates of Cloud Radiative Forcing over Greenland. Presented by W. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2014. *Eos Trans. AGU*, **94**(54), Fall Meet. Suppl., Abstract C21C-0375. (PDF)

CM127. Albani, S., N. M. Mahowald, A. T. Perry, R. A. Scanza, **C. S. Zender**, N. G. Heavens, V. Maggi, J. F. Kok, and B. L. Otto-Bliesner (2014), Dust impacts in different climates in the Community Earth System Model. Presented to Dust 2014: International Conference on Atmospheric Dust, Castellaneta Marina, Italy, June 1–6, 2014. (PDF)

CM126. **__A. Miller__ and **C. S. Zender** (2014), How much do diurnal land-sea circulations contribute to coastal wind power? Presented by A. Miller to the Northeast Regional Honors Council (NRHC), Niagara Falls, NY, April 3–6, 2014. (PDF)

CM125. **Zender, C. S.** and P. Leonard (2014), NASA ESDS Conventions for HDF5 Working Group. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2014. (PDF)

CM124. **Zender, C. S.**, ‡**P. Vicente**, and *__W. Wang__ (2014), Simplifying and accelerating model evaluation by NASA satellite data. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2014. (PDF)

CM123. **Zender, C. S.**, ‡**P. Vicente**, and *__W. Wang__ (2013), Use Hierarchical Storage and Analysis to Exploit Intrinsic Parallelism. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract IN52A-06. (PDF)

CM122. *__Wang, W.__ and **C. S. Zender** (2013), Influence of low-level liquid-containing clouds on Greenland's surface energy budget. Presented by W. Wang to the American Geo-

physical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract C41A-0577. (PDF)

CM121. ****Miller, A.** and **C. S. Zender** (2013), How much do diurnal land-sea circulations contribute to coastal wind power? Presented by A. Miller to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract ED43D-0795. (PDF)

CM120. Stephenson, S. R., S. J. Davis, **C. S. Zender**, and L. C. Smith (2013), Scenarios of 21st-century trans-Arctic shipping for climate studies, Presented by S. Stephenson to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract C43E-03. (PDF)

CM119. Scanza, R., N. M. Mahowald, S. J. Ghan, X. Liu, J. F. Kok, **C. S. Zender**, and Y. Zhang (2013), Dependence of Radiative Forcing on Mineralogy in the Community Atmosphere Model, Presented by R. Scanza to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract A53J-05. (PDF)

CM118. **C. S. Zender**, **‡P. Vicente**, and ***W. Wang** (2013), Simplifying and accelerating model evaluation by NASA satellite data, Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, October 2–4, 2013. (PDF)

CM117. ****Miller, A.** and **C. S. Zender** (2013), Contribution of the Diurnal Sea Breeze to Wind Power Potential at Crystal Cove, Presented by A. Miller to the UCI ESS REU Symposium, University of California, Irvine, CA, August 14, 2013. (PDF)

CM116. **Zender, C. S.**, **‡P. Vicente**, and ***W. Wang** (2012), NCO: Simpler and faster model evaluation by NASA satellite data via unified file-level netCDF and HDF-EOS data post-processing tools. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 3–7, 2012. *Eos Trans. AGU*, **93**(53), Fall Meet. Suppl., Abstract IN34A-07. (PDF)

CM115. **†Allen, R. J.**, S. C. Sherwood, J. R. Norris, and **C. S. Zender** (2012), Recent Northern Hemisphere Tropical Expansion Primarily Driven by Black Carbon and Tropospheric Ozone. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 3–7, 2012. *Eos Trans. AGU*, **93**(53), Fall Meet. Suppl., Abstract A53X-08. (PDF)

CM114. **Zender, C. S.**, **‡P. Vicente**, and ***W. Wang** (2012), Simplifying and accelerating model evaluation by NASA satellite data. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Annapolis, MD, November 13–15, 2012. (PDF)

CM113. Bond, T. C., and 30 co-authors including **C. S. Zender** (2012), Bounding the role of black carbon in climate: A scientific assessment. Presented by T. C. Bond to the Twelfth International Global Atmospheric Chemistry (IGAC) Conference, Beijing, China, September 17–21, 2012. (PDF)

CM112. ****Serino, M.** and **C. S. Zender** (2012), Quantifying Diurnal and Seasonal Wind Power at Crystal Cove. Presented by M. Serino to the UCI ESS REU Symposium, University of California, Irvine, CA, August 14, 2012. (PDF)

CM111. **Zender, C. S.** (2012), Benefits of Bringing the Environment to the Classroom. Presented to the Climate, Literacy Empowerment And iNquiry (CLEAN) Education Science Communication and Outreach Workshop "K-to-Gray: Communicating Science to Students of All Ages", University of California, Irvine, January 30, 2012. (PDF)

CM110. **Zender, C. S.**, ***A. G. Krolewski**, *M. G. Tosca, and J. T. Randerson (2011), Tropical biomass burning smoke plume size, shape, reflectance, and age based on 2001–2009 MISR imagery of Borneo. Presented to the MISR Data Users Science Symposium, Jet Propulsion Laboratory, Pasadena, CA, December 13–14, 2011. (PDF)

CM109. *M. G. Tosca, C. S. Zender and J. T. Randerson (2011), Constraining modeled fire AOD using remote sensing products and quantifying the global climate response to smoke aerosol emissions. Presented by M. Tosca to the MISR Data Users Science Symposium, Jet Propulsion Laboratory, Pasadena, CA, December 13–14, 2011. (PDF)

CM108. ***Krolewski, A.**, **C. S. Zender**, *M. G. Tosca, and J. T. Randerson (2011), Tropical biomass burning smoke plume size, shape, reflectance, and age based on 2001–2009 MISR imagery of Borneo. Presented by A. Krolewski to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2011. *Eos Trans. AGU*, **92**(53), Fall Meet. Suppl., Abstract GC23C-0957. (PDF)

CM107. †**Allen, R. J.**, S. C. Sherwood, J. R. Norris, and **C. S. Zender** (2011), The Equilibrium Response to Idealized Thermal Forcings in a Comprehensive GCM: Implications for Recent Tropical Expansion. Presented by R. J. Allen to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2011. *Eos Trans. AGU*, **92**(53), Fall Meet. Suppl., Abstract A11F-0147. (PDF)

CM106. *M. G. Tosca, J. T. Randerson, and **C. S. Zender** (2011), Quantification of regional radiative impacts and climate effects of tropical fire aerosols. Presented by M. Tosca to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2011. *Eos Trans. AGU*, **92**(53), Fall Meet. Suppl., Abstract GC21E-02. (PDF)

CM105. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender** (2011), Simulating the climate impacts of fire using a global climate model. Presented by M. Tosca to the NASA Carbon Cycle & Ecosystems Workshop, Washington, DC, October 3, 2011. (PDF)

CM104. Yasunari, T. J., R. D. Koster, M. Suarez, K.-M. Lau, S. P. P. Mahanama, T. Aoki, P. R. Colarco, A. M. da Silva, K.-M. Kim, Y. C. Sud, M. G. Flanner, C. S. Zender, T. Yamazaki, H. Motoyoshi, and Y. Kodama (2011), Snow albedo and snow impurities. Presented by T. J. Yasunari to the NASA GEOS-5 AGCM MAP Investigator Workshop, NASA/GSFC, Greenbelt, MD, June 2011.

CM103. *M. G. Tosca, J. T. Randerson, **C. S. Zender** (2011), Feedbacks between Fire and ENSO: Scaling emissions and developing a semi-prognostic fire module for CAM5. Presented by M. Tosca to the 16th Annual CESM Workshop, Breckenridge, CO, June 18–20, 2011. (PDF)

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CM23. Ammann, C. M., J. T. Kiehl, B. L. Otto-Bliesner, **C. S. Zender**, and Raymond S. Bradley (2001): External forcing and 20th century climate in the CSM. Presented by C. Ammann to the Sixth Annual Community Climate System Model Workshop, Breckenridge, CO, June 25–27, 2001.

CM22. Ammann, C. M., J. T. Kiehl, B. L. Otto-Bliesner, and **C. S. Zender** (2000): Contribution of Explosive Volcanism to the Global Warming Attribution in the 20th Century. Presented by C. Ammann to the Fall Meeting of the American Geophysical Union, San Francisco, CA, December 14–18, 2000.

CM21. **Zender, C. S.** (2000), Implications of the Size-Resolved Distribution of African Mineral Dust Over the Tropical North Atlantic. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 14–18, 2000.

CM20. Yu, S., **C. S. Zender**, and V. K. Saxena (2000): Aerosol direct radiative forcing in the southeastern US: estimates from measurement and model results. Presented by S. Yu to the 7th International Conference on Atmospheric Science and Applications to Air Quality (ASAAQ) Conference, Taipei, Taiwan, China, October 30–November 2, 2000.

CM19. **Zender, C. S.** (2000): Mineral Dust Variability over the N. Atlantic and Indian Oceans. Presented at the Fifth Annual Community Climate System Model Workshop, Breckenridge, CO, June 27–29, 2000.

CM18. Collins, W. D., P. J. Rasch, B. E. Eaton, D. W. Fillmore, J. T. Kiehl, and **C. S. Zender** (2000): Simulation of Regional Aerosol Distributions and Radiative Forcing for INDOEX. Presented by W. Collins to the XXV General Assembly, European Geophysical Society (EGS), Nice, France, April 25–29, 2000. EGS Newsletter, vol. 74, p. 189.

CM17. **Zender, C. S.** (2000): Mineral Dust Aerosol over the N. Atlantic and Indian Oceans: Simulations, Evaluations, and links to Biogeochemistry. Presented to the NCAR Biogeochemistry Working Group Meeting, Boulder, CO, March 28–29, 2000.

CM16. Collins, W. D., P. J. Rasch, D. W. Fillmore, **C. S. Zender**, J. T. Kiehl, and B. E. Eaton (2000): Direct radiative forcing and heating during INDOEX: Results from an aerosol analysis with assimilation. Presented by W. Collins to Fall Meeting of the American Geophysical Union. *Eos Trans. AGU*, vol. **80**(46), p. F183, 2000.

CM15. **Zender, C. S.** (1999): Mineral Dust Shortwave Radiative Forcing. Presented to the Workshop on Mineral Dust, Boulder, CO, June 9–11, 1999.

CM14. **Zender, C. S.** (1998): Tropospheric Mineral Dust: Observations and Implications. Presented to the Third Annual Climate System Model Workshop, Breckenridge, CO, June 22–24, 1998.

CM13. **Zender, C. S.** (1998): $O_2 \cdot O_2$ and $O_2 \cdot N_2$: Climatological Abundance, Forcing, and Response. Presented to the Third Annual Climate System Model Workshop, Breckenridge, CO, June 22–24, 1998.

CM12. **Zender, C. S.** (1998): $O_2 \cdot O_2$, $O_2 \cdot N_2$, and $(H_2O)_2$: Climatological Abundance, Forcing, and Response. Presented to the Gordon Research Conference on Solar Radiation and Climate, Plymouth, NH, June 15–18, 1998.

CM11. **Zender, C. S.** and P. Chýlek (1998): A global climatology of $O_2 \cdot O_2$, $O_2 \cdot N_2$, and $(H_2O)_2$ abundance and absorption. Presented to the Eighth Atmospheric Radiation Measurement (ARM) Science Team Meeting, Tucson, AZ, March 23–27, 1998.

CM10. **Zender, C. S.** (1998): Dust in the NCAR CSM: links to paleoclimate. Presented to

the 1998 CSM Paleoclimate Working Group Meeting, Boulder, CO, February 17–18, 1998.

CM9. **Zender, C. S.** (1997): The simulation of the global dust distribution in the NCAR CCM3. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 8–12, 1997.

CM8. **Zender, C. S.**, B. Bush, S. K. Pope, A. Bucholtz, W. D. Collins, J. T. Kiehl, F. P. J. Valero, and J. Vitko, Jr. (1997): Atmospheric absorption during ARESE. presented to the Seventh Atmospheric Radiation Measurement (ARM) Science Team Meeting, San Antonio, TX, March 3–7, 1997.

CM7. **Zender, C. S.** and J. T. Kiehl (1997): Tropical climate sensitivity to representation of cirrus anvil lifecycle. *Proceedings of the Ninth AMS Conference on Atmospheric Radiation*, pp. 111–114, American Meteorological Society Annual Meeting, Long Beach, CA, February 2–5, 1997

CM6. **Zender, C. S.**, and J. T. Kiehl (1996): Climate sensitivity to tropical anvil representation. Presented to the Summer Workshop on Climate Modeling, Center for Clouds, Chemistry, and Climate, Scripps Institute of Oceanography, San Diego, CA, July 1996.

CM5. **Zender, C. S.**, and J. T. Kiehl (1995): Parameterization of Anvil Clouds in the NCAR GCM. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 11–15, 1995.

CM4. **Zender, C. S.**, and J. T. Kiehl (1995): Parameterization of Anvil Clouds in the NCAR GCM. Presented to the Cloud Modeling and Measurement Workshop, NOAA ERL, Boulder, CO, October 23–25, 1995.

CM3. Kiehl, J. T., and **C. S. Zender** (1995): A prognostic ice water scheme for anvil clouds. Presented by J. T. Kiehl. In: *Proceedings of the Workshop on Cloud Microphysics Parameterizations in Global Atmospheric Circulation Models*, pp. 167–188, World Meteorological Organization, WCRP-90, WMO/TD-No. 713, Kananaskis, Alberta, Canada, May 23–25 1995.

CM2. **Zender, C. S.**, and J. T. Kiehl (1994): The radiative influence of crystal habit and size in tropical anvils. In: *Proceedings of the Eighth AMS Conference on Atmospheric Radiation*, pp. 561–563, American Meteorological Society Annual Meeting, Nashville, TN, January 24–28, 1994.

CM1. **Zender, C. S.**, and J. T. Kiehl (1993): Sensitivity of Modeled Cirrus Radiative Properties to Small Ice Crystals. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 6–10, 1993.

THESIS ADVISOR AND POSTGRADUATE SCHOLAR SPONSOR

1. Chair or Co-Chair of Thesis Committee (graduating university, last-known position/institution): Ms. Shayma Al Ali 8/19–present (UCI), Dr. Scott Capps 3/05–11/09 (UCI, CEO, Atmospheric Data Solutions), Ms. Erin Delman 12/15–6/16 (UCI, withdrew, UCLA law student), Dr. Mark Flanner 3/03–6/07 (UCI, Professor, U. Mich.), Dr. Morgan Gorris 9/14–8/19 (UCI, Postdoc, LANL), Dr. Alf Grini 1/02–2/04 (UiO, Researcher, UiO CICERO), Dr. Qin Han 3/05–12/10 (UCI, whereabouts unknown), Mr. Matthew Laffin 9/17–present (UCI), Dr. Michael (Mika) Tosca 7/06–3/12 (UCI, Professor, Art Institute of Chicago), Dr. Daniel Wang 10/05–11/08 (UCI, Researcher,

SLAC), Dr. Wenshan Wang 8/12–12/17 (UCI, Postdoc, UCI), Mr. Zachary Wolff 9/16–present (UCI)

2. Member of Thesis Committee: Dr. Ann Bardin 4/10–8/14 (UCI, Postdoc, UCI), Dr. Aaron Berg 12/01–8/03 (UCI, Professor, U. Guelph), Dr. Huisheng Bian 8/00–9/01 (UCI, Researcher, NASA GSFC), Dr. Rick Hansell 9/05–12/07 (UCLA, Researcher, NASA GSFC), Dr. Brian Kahn 10/03–4/05 (UCLA, Researcher, NASA JPL/CalTech), Dr. Aparna Krishnamurthy 6/06–6/09 (UCI, Researcher, IITM), Dr. Collin Lawrence 7/11–1/15 (UCI, whereabouts unknown), Dr. Calvin Liang 4/08–6/11 (UCLA, Researcher, NASA JPL/Northrop Grumman), Dr. Huidong Liu 3/10–12/13 (UCI, whereabouts unknown), Dr. Zhao Liu 3/11–10/14 (UCI, whereabouts unknown), Dr. Min-Hui Lo 5/07–6/10 (UCI, Professor, NTU), Dr. Marco Rodriguez 1/02–3/04 (UCI, Researcher, CSU CIRA), Dr. Brendan Rogers 7/11–3/14 (UCI, Postdoc, WHRC) Dr. Kurt Solander 4/13–4/16 (UCI, Postdoc, LANL)
3. Member of Advancement (and not Thesis) Committee: Dr. Ray Anderson 5/07–6/07 (UCI, now at UCI), Ms. Sarah Bortz 4/04–6/04 (UCI), Dr. Colene Haffke 7/11–6/13 (UCI), Ms. JungWook Lee 6/01–9/01 (UCI)
4. Postdoctoral scholars supervised: Dr. Robert Allen 10/08–10/10 (Professor, UCR), Dr. Cheng Dang 4/17–present, Dr. Huisheng Bian 10/01–9/03 (Researcher, UMBC GEST/NASA GSFC), Dr. Sagar Parajuli 6/16–9/17 (Researcher, KAUST), Dr. Adam Schneider 12/18–present, Dr. Wenshan Wang 1/18–present, Dr. Xianwei Wang 6/08–1/11 (Professor, Sun Yat-Sen Univ., Guangzhou, China)
5. Researchers supervised: Dr. Morgan Gorris 9/19–10/19 (Postdoc, LANL), Dr. Chao Luo 2/05–10/06 (Researcher, Georgia Tech), Dr. Harry Mangalam 2/05–3/06 (Research Computing, UCI OIT), Dr. David Newman 11/01–4/03 (Google),
6. Software engineers supervised: Mr. Henry Butowsky 10/00–present (freelance programmer), Mr. Pat Jones 6/01–10/01 (whereabouts unknown), Mr. Ajay Saini 10/17–present, Mr. Dan Stromberg 1/04–12/05 (whereabouts unknown), Mr. Pedro Vicente 6/12–5/14 (Programmer, NOAA), Dr. Dingying Wei 12/14–3/15 (Programmer, UCI)
7. Total number of graduate students supervised: 12.
8. Total number of postgraduate scholars sponsored: 7.

STUDENT THESES: CHAIR OR CO-CHAIR OF COMMITTEE

TC10. Matthew Keith Laffin (Expected 2022): Contribution of Wind-Induced Melt to Hydrofracture Potential from Machine-Learning Analysis of ERA5 and Automatic Weather Stations (PDF)

TC9. Zachary Wolff (Expected 2021): Climate Sensitivity to Spectrally Resolved and Medium-Dependent Sea-Ice Emissivity (PDF)

TC8. Morgan Elizabeth Gorris (2019): Environmental Infectious Disease Dynamics in Relation to Climate and Climate Change (PDF) Jointly supervised with ESS Prof. J. Randerson.

TC7. Wenshan Wang (2017): Contributions of clouds to Greenland's surface melt. Ph.D Thesis, 173 pp., University of California, Irvine. (PDF)

TC6. Michael George (now Mika) Tosca, Jr. (2012): Fire and smoke in the Earth system: Evaluating the impact of fire aerosols on regional and global climate. Ph.D Thesis,

129 pp., University of California, Irvine. Jointly supervised with ESS Prof. J. Randerson. (PDF)

TC5. Qin Han (2010): Crustal Tracers in the Atmosphere and Ocean: Relating their Concentrations, Fluxes, and Ages. Ph.D Thesis, 127 pp., University of California, Irvine. Jointly supervised with ESS Prof. J. K. Moore. (PDF)

TC4. Scott Blair Capps (2009): Surface Wind Speed Distributions: Implications for Climate and Wind Power. Ph.D Thesis, 136 pp., University of California, Irvine. (PDF)

TC3. Daniel Liwei Wang (2008): Compilation, Locality Optimization, and Managed Distributed Execution of Scientific Dataflows. Ph.D Thesis, 140 pp., University of California, Irvine. Jointly supervised with EECS Prof. S. Jenks. (PDF)

TC2. Mark Gregory Flanner (2007): Effects of Vertically-Resolved Solar Heating, Snow Aging, and Black Carbon on Snow-Albedo Feedback. Ph.D Thesis, 110 pp., University of California, Irvine. (PDF)

TC1. Alf Grini (2004): Natural Aerosols in the Global Atmosphere. Ph.D Thesis, 85 pp., University of Oslo. Jointly supervised with UiO Prof. I. Isaksen. (PDF)

STUDENT THESES: MEMBER OF COMMITTEE

TM14. Kurt Solander (2016): Numerical modeling and remote sensing of global water management systems: Applications for land surface modeling, satellite missions, and sustainable water resources management. Ph.D. Thesis, University of California, Irvine. (J. Famiglietti, Chair)

TM13. Collin Baxter Lawrence (2014): Glaciers and freshwater resources in a changing climate Ph.D. Thesis, University of California, Irvine. (J. Famiglietti, Chair)

TM12. Zhao Liu (2014): An Explicit Representation of River Networks in a Continental-Scale Catchment-based Land Surface Model Framework. Ph.D. Thesis, University of California, Irvine. (J. Famiglietti, Chair)

TM11. Ann Bardin (2014): Novel Analysis Tools for Ocean Biogeochemical Models. Ph.D. Thesis, University of California, Irvine. (F. Primeau, Chair)

TM10. Brendan Morris Rogers (2014): Towards a better understanding of boreal forest fires and their role in the climate system. Ph.D. Thesis, University of California, Irvine. (J. Randerson, Chair)

TM9. Huidong Liu (2013): Lakes in Land Surface Models: Simulation and validation using satellite measurements. Ph.D. Thesis, University of California, Irvine. (J. Famiglietti, Chair)

TM8. Calvin K. Liang (2011): A Multi-Sensor Perspective on the Tropical Interannual Variability of Humidity and Clouds Ph.D. Thesis, 131 pp., University of California, Los Angeles. (K. N. Liou (UCLA) and Anne-Marie Eldering (JPL), Chairs)

TM7. MinHui Lo (2010): The Role of Groundwater in Hydrological Processes and Memory Ph.D. Thesis, 160 pp., University of California, Irvine. (J. Famiglietti, Chair)

TM6. Aparna Krishnamurthy (2009): Simulating The Effects of Atmospheric Nutrient Deposition on Ocean Biogeochemistry. Ph.D. Thesis, 183 pp., University of California, Irvine. (J. K. Moore, Chair)

TM5. Richard Allen Hansell, Jr. (2007): Ground and Satellite-Based Remote Sensing of Mineral Dust Using AERI Spectra and MODIS Thermal Infrared Window Brightness

Temperatures. Ph.D. Thesis, 220 pp., University of California, Los Angeles. (K. N. Liou (UCLA) and Dr. Anne-Marie Eldering (JPL), Chairs)

TM4. Brian Hannon Kahn (2005): The detection and characterization of cirrus cloud properties from simulated and observed high-spectral-resolution infrared radiances. Ph.D. Thesis, 133 pp., University of California, Los Angeles. (K. N. Liou (UCLA) and Dr. Anne-Marie Eldering (JPL), Chairs)

TM3. Marco Antonio Rodriguez (2004): Aerosol Dynamics in the Global Troposphere. Ph.D. Thesis, 129 pp., University of California, Irvine. (D. Dabdub, Chair)

TM2. Aaron Andrew Berg (2003): Modelling and Analysis of Regional and Global Soil Moisture Variations Ph.D. Thesis, 119 pp., University of California, Irvine. (J. Famiglietti, Chair)

TM1. Huisheng Bian (2001): Improvement and Application of UCI Chemistry Transport Model. Ph.D. Thesis, 299 pp., University of California, Irvine. (M. Prather, Chair)

STUDENT AWARDS

16. Matthew Laffin: MAPS Fellowship, Machine Learning and Physical Sciences Program, 9/19–8/21
15. Patrick Joseph Winters McCarthy: SURP Fellow, Summer Undergraduate Research Program (SURP)/Undergraduate Research Opportunities Program (UROP), 6/19-8/19
14. Morgan Gorris: ESS Department Faculty Endowed Fellowship, 2019
13. Morgan Gorris: Outstanding Student Presentation Award (limited to top 5% of student presentations), Fall AGU Meeting, Washington, DC, 12/18
12. Morgan Gorris: Top Student Paper Presenter Award, AMS 8th Conference on Environment and Health, Seattle, WA, 1/17
11. Morgan Gorris: National Defense Science and Engineering Graduate Fellowship, AY 2017–19
10. Morgan Gorris: Borrego Valley Endowment Fund fellowship, 2016–2018
9. Alex Krolewski: Intel Science Talent Search (STS) 2011 Semifinalist, 2/11
8. Michael Tosca: NASA Earth and Space Science Fellowship (ESSF), AY 2008–11
7. Scott Capps: UCI School of Physical Sciences ARCS Foundation Scholar, AY 2007–09
6. Scott Capps: First Place Poster Presentation Award, AMS Air-Sea Interaction Conference, Portland, OR, 10/07
5. Scott Capps: Outstanding Contributions to the Department of Earth System Science, 2006
4. Mark Flanner: NASA Earth and Space Science Fellowship (ESSF), AY 2005–07
3. Mark Flanner: Outstanding Presentation, UCI Institute for Geophysics and Planetary Physics, 2006
2. Mark Flanner: UCI Medal Award, 2005
1. Mark Flanner: Outstanding Student Presentation in Atmospheric Sciences Section, Fall AGU Meeting, San Francisco, CA, 12/05

OTHER GRADUATE RESEARCH SUPERVISION

5. Justin Tang 6/17–present (UCD)

4. Alok Dadlani 12/15–3/16 (UCI CS)
3. Gayathri Venkitachalam 12/04–7/05 (UCI, withdrew)
2. Eun Young Kwon 3/03–12/03 (UCI, transfer)
1. Sarah Bortz 9/02–6/03 (UCI, transfer, withdrew)

UNDERGRADUATE RESEARCH SUPERVISION

U10. Patrick Joseph Winters McCarthy 12/18–present (SURF/UROP)
U9. Patrick Mara 2/18–present
U8. Jerome Mao 1/16–6/17
U7. Andrew Miller 6/13–12/13 (NSF REU student from The College of New Jersey, NJ)
U6. Michelle Serino 6/12–8/12 (NSF REU student from Millersville University, PA)
U5. Alex Krolewski 9/11–4/12 (Harvard University, Cambridge, MA)
U4. Michael Brown 3/05–2/06 (SURF-IT)
U3. Danielle Johnson 6/05–8/05
U2. Stephen Bamattre 7/01–1/03 (UROP)
U1. Hyeryun Kim 5/00–6/01

HIGH SCHOOL RESEARCH SUPERVISION

HS1. Alex Krolewski 6/10–8/11 (University High School, Irvine, CA)

COURSES TAUGHT (F, W, S, É = Fall, Winter, Spring, Été=Summer academic quarter or semester of year YY)

1. ESS 5, The Atmosphere: S00*, S01*, S02*, S03, S04, S05 (*ESS 20E)
2. ESS 11, Climate Change and Policy: W06, W07
3. ESS 55, Earth's Atmosphere: S18, S19, S20
4. ESS H90, The Idiom and Practice of Science: Geoengineering: F08, F09, F10, S12
5. ESS 110, Environmental Controversies: S12, S13, F13, F14
6. ESS 138, Remote Sensing: S19, S20
7. ESS 112/222, Global Climate Change and Impacts: W16
8. ESS 172/272, Science Communication & Outreach: W12*, S12*, F12*, W13, S13 (*ESS 280A)
9. ESS 199, Undergraduate Research: S00, F00, S02, F02, S05, F05, W06, É12, É13
10. ESS 200, Global Physical Climatology: F13*, F14, F15, F16, F17 (*ESS 280A)
11. ESS 204B, The Planetary Boundary Layer: W04, W05, W06, W07
12. ESS 223, Earth System Physics: F02*, F03†, F04†, F05†, F06†, F08†, F09, F10 (*ESS 201A, †ESS 200B)
13. ESS 231, Global Hydrology: S11
14. ESS 236, Radiative Transfer & Remote Sensing: W01* (*ESS 111/211)
15. ESS 282, Topics in Climate: Aerosol-Cloud-Climate Interactions: W02* (*ESS 233)
16. ESS 282, Topics in Climate: Global Climate Modeling: F09
17. ESS 282, Topics in Climate: Radiative Processes & Climate: W06*–S10*, S13, S14, S15, S16, S17, S18 (*ESS 291)
18. ESS 286, Topics in Biogeochemistry: Chemistry, Composition, and Climate: F02
19. ESS 286, Topics in Biogeochemistry: Land Surface Process Modeling: W03

20. ESS 290, Departmental Seminar: F00–S01, W11–F13
21. ESS 298, Practicum in Earth System Science: S03, W10, F10, S13, S15
22. ESS 299, Research: All quarters W02–W12, F12, F13–present
23. ESS 399, University Teaching: S00, S01, S02, S03, S04, S05, W06, W07, F08, F09, F10, S12, S18, S19, S20
24. COA Calculus I & II, College of the Atlantic, Bar Harbor, ME: S91
25. COA Physics I, COA: S91

SPECIAL PEDAGOGICAL ACTIVITIES

PA4. Workshop organizer and host, Science Communication and Outreach Workshop "K-to-Gray: Communicating Science to Students of All Ages", 35 participants, University of California, Irvine, January 30, 2012.

PA3. Participant, COMET Summer 2011 Course for Faculty on Integrating Satellite Data and Products into Geoscience Courses with Emphasis on Advances in Geostationary Satellite Systems, Boulder, Colorado, August 8–12, 2011.

PA2. Organizer, NCAR Command Language (NCL) Workshop. ESS UCI, September 14–17, 2010.

PA1. Participant, Asilomar International Conference on Climate Intervention Technologies, Monterey, CA, March 22–26, 2010.

SPONSORED RESEARCH PROJECTS

Funds listed are to UCI (Zender's group) unless otherwise indicated.

G25. PI DOE E3SM (LLNL-B632442): "High-Performance Analysis and Regridding Support for E3SM" $380301, 12/4/2018–6/30/2020.

G24. Co-PI DOE Scientific Discovery through Advanced Computing (SciDAC) (ProSPect LANL-520117): "Improving Ice Sheet Surface Mass Balance in E3SM Through Improvements to the Physical Snowpack Model" (PI: S. Price, Los Alamos National Laboratory) $173787, 1/8/2019–9/30/2021.

G23. Co-PI DOE Earth System Model Development and Analysis (ESM) (DE-SC0019278): "Incorporate more realistic surface-atmosphere radiative coupling in E3SM" (PI: X. Huang, U. Michigan) $1041098 ($156988 to UCI), 9/15/2018–9/142021.

G22. PI DOE (LLNL-B625903): "High-Performance Analysis and Regridding Support for ACME" $199985, 10/5/2017–9/302018.

G21. PI NASA Advanced Information Systems Technology (AIST 2016) (AIST NNH13ZDA 001N): "JAWS: Justified AWS-like data through workflow enhancements that ease access and add scientific value", $888828, 10/1/2017–9/30/2019.

G20. Co-I DOE Advanced Research Projects Agency–Energy (ARPA-E) Transportation Energy Resources from Renewable Agriculture (TERRA) Project "Reference Data and Computing Pipeline for High Throughput Phenotyping to Support Breeding of Biomass Sorghum", (DE-AR0000594): (PI: David LeBauer, UIUC) $99740 to UCI, 12/1/2015–11/30/2017.

G19. PI Borrego Valley Endowment Fund Fellowship for Morgan Gorris (BVEF-204987): "Evaluating, Modeling, and Attributing Particulate Matter Air Quality in Borrego Springs", $65608, 1/1/2016–12/31/2018.

G18. PI DOE Accelerated Climate Modeling for Energy (ACME) University Partnership (DE-SC0012998): "Snow Radiative Harmonization across ACME" $202368, 5/1/2016–12/14/2018.

G17. Co-PI NSF Integrative and Collaborative Education and Research (ICER) Program grant jointly funded by the Directorate for Geosciences (GEO), and Directorate for Computer & Information Science & Engineering (CISE), Division of Advanced Cyberinfrastructure (ACI), (AGS-1541031): "EarthCube IA: Collaborative Proposal: Advancing netCDF-CF for the Geoscience Community", (PI: E. Davis, UCAR Unidata, four Co-PIs), $1091266 ($77732 to UCI), 9/1/2015–8/31/2020.

G16. PI DOE Accelerated Climate Modeling for Energy (ACME) University Partnership (DE-SC0012998): "Lightweight Climate Analysis Tools for ACME" $300000, 12/15/2014–12/14/2017.

G15. PI NASA Advancing Collaborative Connections for Earth System Science (ACCESS 2013) (ACCESS NNX14AH55A): "Easy Access to and Analysis of NASA and Model Swath-like Data", $622302 ($545094 to UCI), 7/1/2014–6/30/2018.

G14. PI NASA Advancing Collaborative Connections for Earth System Science (ACCESS 2011) (ACCESS NNX12AF48A): "Simplifying and accelerating model evaluation by NASA satellite data", $490923, 2/8/2012–2/7/2015.

G13. Co-PI NASA Earth and Space Science Fellowship for Michael Tosca (ESSF NNX08A U90H): "Linking El Niño and biomass burning in a coupled feedback system", (PI: Jim Randerson, UCI), $72000, 9/1/2008–8/31/2011.

G12. PI NSF grant jointly funded by Office of Polar Programs (OPP), Division of Arctic Sciences (ARC), Arctic Natural Sciences (ANS) Program and Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Climate and Large-Scale Dynamics (CLD) Program (ARC-0714088): "Snow Process Studies and Modeling to Improve Arctic Climate Prediction" $518482, 9/1/2007–8/31/2011.

G11. PI NASA International Polar Year (IPY) (IPY06 NNX07AR23G): "Black Carbon Impacts on Cryospheric Climate Sensitivity and Surface Hydrology", $607000, 8/2/2007–8/1/2011.

G10. Co-PI NSF Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Biocomplexity in the Environment (BE) Program (ATM-0628637): "Collaborative Research: Fire at the Intersection of Global Carbon and Water Cycles", (PI: Jim Randerson, UCI, four Co-PIs), $595689, 10/1/2006–9/30/2010.

G9. PI NASA Earth and Space Science Fellowship for Mark Flanner (ESSF NNG05GP30H): "Climate Sensitivity To Snow Radiative Processes: Improving Physical Representation And Understanding With MODIS/MISR" $48000, 9/1/2005–8/31/2007.

G8. Co-PI NSF Directorate for Geosciences (GEO), Division of Oceanography (OCE), Chemical Oceanography Program (OCE-0452972): "Global Atmospheric Nutrient Deposition and Ocean Biogeochemistry", (PI: Keith Moore, UCI), $499001, 3/15/2005–2/29/2009.

G7. PI NSF Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Small Grant for Exploratory Research (SGER) Program (ATM-0503148): "SGER: Improving CCSM Snow/Ice Radiative and Heating Processes and Asssessing the Importance of the Soot Albedo Effect", $26828, 2/1/2005–1/31/2006.

G6. PI NSF Directorate for Computer and Information Science and Engineering (CISE), Division of Information and Intelligent Systems (IIS), Science and Engineering Informatics (SEI) Program (IIS-0431203): "SEI(GEO): Scientific Data Operators Optimized for Distributed Interactive and Batch Analysis of Tera-Scale Geophysical Data", $594417, 9/1/2004–8/31/2008.

G5. Co-PI NSF Directorate for Computer and Information Science and Engineering (CISE), Division of Computer and Network Systems (CNS), Major Research Instrumentation (MRI) Program (CNS-0421554): "HIPerWall: A High-Performance Visualization System for Collaborative Earth System Sciences" (PI: Falko Kuester, UCI), $562190 ($393533 NSF + $168657 UCI), 9/1/2004–8/31/2007.

G4. PI NSF Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Major Research Instrumentation (MRI) Program (ATM-0321380): "Acquisition of an Earth System Modeling Facility for Coupled Climate, Chemistry, and Biogeochemistry Studies", $1105k ($773543 NSF + $332000 UCI), 8/1/2003–7/31/2006.

G3. PI NSF Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Earth System History (ESH) Program (ATM-0214430): "Collaborative Proposal: Using Measurements from the Columbia Plateau Eolian System to Improve Global-Scale Models of Mineral-Dust Aerosols" (Collaborative with Alan Busacca, WSU, ATM-0214508, $311500), UCI share $88395, 8/1/2002–7/31/2005.

G2. PI NASA New Investigator Program (NIP) (NAG5-10546): "Influence of Mineral Dust Aerosol on the Chemical Composition of the Atmosphere", $330000, 1/1/2001–12/31/2004.

G1. Co-PI NASA Interdisciplinary Science (IDS) (NAG5-10147): "Effects of land-use on climate and water resources: Application of a land surface model for land-use management" (PI: Gordon Bonan, NCAR), $360000, UCI share $60000, 1/1/2000–12/31/2002.

PEER-REVIEWED INTERNAL RESEARCH PROJECTS

GI4. PI UC Irvine Summer Undergraduate Research Program (SURP)/Undergraduate Research Opportunity Program (UROP): "Climate Change and the Information Entropy of Earth's Atmosphere", $1200, 2019.

GI3. PI UC Irvine Physical Sciences Committee on Research (COR) (COR 2013): "Marine Weather Station for Coastal Wind Power Studies and Education", $3500, 12/16/2013.

GI2. Co-PI UC Irvine CORCLR Multi-Investigator Faculty Research Grant: "Earth and Planetary System Science Game Engine (EPSS-GE)", (PI: Falko Kuester, UCI, two Co-PIs), $15250, 7/1/2005–6/30/2006.

GI1. PI UC Irvine Undergraduate Research Opportunity Program (UROP): "Contribution of Resonance Peaks to Aerosol Absorption", $400, 2002–2003.

PEER-REVIEWED COMPUTATIONAL RESOURCE GRANTS

GC3. Co-PI DOE Innovative and Novel Computational Impact on Theory and Experiment (INCITE) (PI: Mark Taylor, SNL) support for DOE (DE-SC0012998): "Accelerated Climate Modeling for Energy", (PI: Dave Bader, LLNL), 90M core hours on Titan, 290M core-hours on Theta, 1/1/2018–12/31/2019.

GC2. PI NCAR Computational & Information Systems Laboratory (CISL) #36271015, support for NSF (ATM-0628637): "Collaborative Research: Fire at the Intersection

of Global Carbon and Water Cycles", (PI: Jim Randerson, UCI), 180,000 GAUs, 6/1/2009–9/30/2010.

GC1. PI NCAR Computational & Information Systems Laboratory (CISL) #36271015, support for NSF (ATM-0628637): "Collaborative Research: Fire at the Intersection of Global Carbon and Water Cycles", (PI: Jim Randerson, UCI), 148,220 GAUs, 5/1/2007–2/28/2009.

HONORS

H4. Kavli Frontiers Fellow, US National Academy of Sciences and Alexander von Humboldt Foundation of Germany: 2009, 2010, 2011

H3. NASA New Investigator Program (NIP) Award, 1/01–12/04

H2. Outstanding Contributions to Undergraduate Education Award, UC Irvine School of Physical Sciences, Department of Earth System Science, AY 2001-02

H1. Outstanding Student Presentation in Atmospheric Sciences Section, Fall AGU Meeting, San Francisco CA, 12/95

FELLOWSHIPS

F6. Gaspar de Portolà Catalonian Studies Program Scholarly Exchange Fellowship, University of California, 2004

F5. Advanced Study Program (ASP) Postdoctoral Fellowship, NCAR, 7/96–6/98

F4. Graduate Fellowships, University of Colorado at Boulder, 1992–1994

F3. NASA Earth Science Summer School Fellowship, La Jolla, CA, 6/92

F2. IBM Thomas J. Watson Scholarship, Harvard University, 1982–1986

F1. Summer Science Program (SSP), Ojai, CA, 1981

MEMBERSHIPS

M7. European Geosciences Union, 2004, 2008, 2012, 2016.

M6. Global Change & Terrestrial Ecosystems (GCTE), Focus 3: Soil Erosion Network (SEN), 2003–2010.

M5. American Association for Aerosol Research (AAAR), 2003–2004.

M4. NCAR CCSM Biogeochemistry Working Group, 2000–2010.

M3. NCAR CCSM Atmospheric Model Working Group, 1996–2010.

M2. American Meteorological Society (AMS), 1994–2010.

M1. American Geophysical Union (AGU), 1993–present.

CONSULTING ACTIVITIES, GOVERNMENT AND INDUSTRY

C12. Scientific Advisor, Long Beach Aquarium of the Pacific Science on a Sphere educational facility, 2009–2016. (*pro bono*)

C11. Expert Witness on Valley Fever transmission and exposure for Law Offices of Hinton Alfert & Kahn, LLP, in *Hukill, et al. vs. State of California, et al.*.

C10. Consultant, Institute of Governance and Sustainable Development (IGSD). Climate mitigation strategies and black carbon. October 6, 2008. (*pro bono*)

C9. Consultant, Earthjustice. Environmental impacts of black carbon emissions due to energy exploration and recovery in the Arctic, September 17, 2008. (*pro bono*)

C8. Consultant, Clean Air Task Force (CATF). Effects of short-lived pollutants, especially black carbon aerosol, on Arctic climate (SPAC), 2007–2009. (*pro bono*)

C7. Expert witness (Video, Oral, Written) at the United States House of Representatives Oversight and Government Reform Committee hearing on Black Carbon and Climate. Washington, DC, October 18, 2007. (*pro bono*)

C6. Reviewer for Prentice Hall "Understanding Weather and Climate" undergraduate text. 2007. (paid)

C5. Consultant, US EPA Alaska Air Quality Workgroup. Fugitive dust. May 2, 2007. (*pro bono*)

C4. Reviewer for Holt, Rinehart, and Winston "California Earth Science" middle-school texts. 2005. (paid)

C3. Member, California Climate Change Advisory Committee, 10/04–6/05. (*pro bono*)

C2. Reviewer for Prentice Hall "Understanding Weather and Climate" undergraduate text. 2003. (paid)

C1. US Advisor to International Science and Technology Center (ISTC) on Aral Sea Remediation. 2002–2004. (*pro bono*)

PROFESSIONAL DEVELOPMENT

PD4. Embedding Research in Undergrad Classes Workshop, American Geophysical Union and National Association of Geoscience Teachers, San Francisco, CA, December 16, 2015.

PD3. Communicating Science Workshop, University of California, Irvine. April 9, 2013.

PD2. Communicating Climate Science Workshop, American Geophysical Union and Union of Concerned Scientists, San Francisco, CA, December 2, 2012.

PD1. Integrating Satellite Data and Products into Geoscience Courses with Emphasis on Advances in Geostationary Satellite Systems, Faculty Residence Course, UCAR/COMET, Boulder, CO, August 8–12, 2011.

SERVICE TO PROFESSIONAL SOCIETIES, CONFERENCE ORGANIZATION, EDITORIAL

SP43. *(Future)* Co-Convener (with S. J. S. Khalsa): Session IN31B: Standards for the Benefit of Science and Society American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2018.

SP42. Judge, Outstanding Student Presentation Award (OSPA), American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2018.

SP41. Member, Science Peer Review Panel, NASA Earth Surface Mineral Dust Source Investigation (EMIT) Mission, Jet Propulsion Laboratory, Pasadena, CA, October 7, 2019.
(Past) Member (and founding Chair), NASA Earth Science Data Systems (ESDS) Dataset Interoperability Working Group (DIWG) (DIWG), 2013–present.

SP40. Primary Convener (with D. Fils): Session IN31B: JSON-Based Structured Data for Discovery, Access, and Usability: Leveraging http://Schema.org, American Geophysical Union Fall Meeting, Washington, DC, December 10–14, 2018.

SP39. Panel reviewer, NSF Arctic Natural Sciences (ANS) Program, November 26–28, 2018.

SP38. Primary Convener (with L. J. McGibbney, J. Gallagher, and Jon Blower): Sessions Th1G and Th2G: JSON Encodings for Spatial Data: Data Modeling, Applications and Use Cases, Earth Science Information Partners (ESIP) 2018 Summer Meeting, Tucson, AZ, July 17–20, 2018.

SP37. Co-Convener (with E. Davis): Sessions We3C and We4C: Advancing netCDF-CF for the Geosciences, Earth Science Information Partners (ESIP) 2018 Summer Meeting, Tucson, AZ, July 17–20, 2018.

SP36. Judge, Outstanding Student Presentation Award (OSPA), American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017.

SP35. Primary Convener (with J. Hamman and R. Abernathey): Session IN32: New Approaches to Analyze Big Geoscientific Datasets, American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017.

SP34. Expert Contact, American Association for the Advancement of Science (AAAS) SciLine `http://http://climatevoices.org`, October, 2017–present.

SP33. Co-Chair (with John Augustine), Session TH-III: Climate and Climate Change in Tropics, Fourth Santa Fe Conference on Global & Regional Climate Change (website), Santa Fe, NM, February 5–10, 2017.

SP32. Co-Chair (with Peter Leonard), NASA Earth Science Data Systems (ESDS) Dataset Interoperability Working Group (DIWG) (DIWG), 2013–2016.

SP31. Panel reviewer, NASA Earth Venture Instruments (EVI-3) Program, Washington, DC, October 21–23, 2015.

SP30. Panel reviewer, DOE Regional and Global Climate Modeling (RGCM) Program, Scientific Discovery through Advanced Computing (SciDAC) and Climate Variability and Change proposals. Gaithersburg, MD, April 21–23, 2014.

SP29. Panel reviewer for DOE Earth System Modeling (ESM) Program, Scientific Discovery through Advanced Computing (SciDAC) proposals. Gaithersburg, MD, April 21–23, 2014.

SP28. Speaker, Climate Voices `http://http://climatevoices.org`, 2/2014–9/2018.

SP27. Technical reviewer, Royal Netherlands Meteorological Institute (KNMI) TROPOMI L2 Input Output Data Definition (IODD). November, 2013.

SP26. Co-Chair, with Peter Leonard, NASA Earth Science Data Systems (ESDS) Conventions for HDF5 Working Group (HDF5WG) (HDF5WG)), January, 2013–November, 2013.

SP25. Member, American Geophysical Union (AGU) Expert Outreach Network AEON, May, 2013–present.

SP24. Member, Expert Council of the Climate Collaboratorium, 2010–2012.

SP23. Reviewer, U.S. Global Change Research Program (USGCRP) 2012–2021 Strategic Plan. November, 2011.

SP22. Symposium Organizing Committee Member and Co-Convener (with Gregor Rehder), Earth Sciences Session: Climate Change and Biodiversity: Paradise Lost or Found? Seventeenth Annual German-American Kavli Frontiers of Science (GAFOS) Symposium of the Alexander von Humboldt Foundation and the U.S. National Academy of Sciences, Irvine, CA, April 8–11, 2011.

SP21. Member, American Geophysical Union (AGU) Climate Science Q&A Service, November, 2010–April 2013.

SP20. Symposium Organizing Committee Member and Co-Convener (with Gregor Rehder), Earth Sciences Session: World Water Resources, Sixteenth Annual German-American Kavli Frontiers of Science (GAFOS) Symposium of the Alexander von Humboldt Foundation and the U.S. National Academy of Sciences, Potsdam, Germany, June 2–5, 2010.

SP19. Member, drafting committee, and Contributing Author of International Global Atmospheric Chemistry (IGAC) report "Bounding the Role of Black Carbon in Climate" University of Tokyo, January 25–28, 2010.

SP18. Panel reviewer, NSF/DOE/USDA Earth System Model (EaSM) Program. Arlington, VA, August 24–26, 2010.

SP17. Member, American Geophysical Union (AGU) Climate Science Experts Referral Service, December, 2009–April, 2013.

SP16. Panel reviewer, NSF Climate and Large-Scale Dynamics (CLD) Climate Process Team (CPT) Program. Arlington, VA, December, 2009.

SP15. Chair, Session 2a: Observations of Mineral Aerosol and Dust Storm Events, Chinese Academy of Sciences (CAS) - Third World Academy of Sciences (TWAS) - World Meteorological Organization (WMO) Forum (CTWF) International Workshop on Mineral Aerosol and Impacts on Climate and Environment, Lanzhou, China, August 17–19, 2009.

SP14. Co-Organizer (with Manuel Lerdau and Gregor Rehder), Earth Sciences Session: Aeolian Dust–Generation, Transport, and its impacts on Climate and Biogeochemistry, at the Fifteenth Annual German-American Kavli Frontiers of Science (GAFOS) Symposium of the Alexander von Humboldt Foundation and the U.S. National Academy of Sciences, Irvine, California, June 5–7, 2009.

SP13. Lead Convener (with Mark Flanner, Joe McConnell, Jing Ming, and Tom Painter), Session C41: Snow and Ice Impurities: Chemical, Climate, and Hydrologic Significance, American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2008.

SP12. Panel reviewer, NASA MAP Program Clouds/Aerosols/Radiation proposals. Greenbelt, MD, November 19–21, 2008.

SP11. Lead Convener (with George Kallos, Andrea Flossmann, and Alcide Giorgio di Sarra), Symposium MS04: Mineral Dust Cycle and its Impact on Clouds and Radiation, 2007 Scientific Assembly of the International Association of Meteorology and Atmospheric Sciences (IAMAS), Perugia, Italy, July 2–13, 2007.

SP10. Editorial Advisory Board (Atmospheric Sciences), Eos Trans. American Geophysical Union (AGU), May 2007–February 2008.

SP9. Panel reviewer, NASA EOS Program, Aerosol/Clouds proposals. Greenbelt, MD, March 19–21, 2007.

SP8. Science Program Committee: Aerosol Workshop on Climate Prediction Uncertainties, Santa Fe, New Mexico, July 20–21, 2006.

SP7. Science Program Committee and Conference Rapporteur: 2nd International Conference on Global Warming and the Next Ice Age, Santa Fe, New Mexico, July 17–19, 2006.

SP6. Expert Reviewer, Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4), Working Group I Contribution. September, 2005–June, 2006.

SP5. Co-Convener (with Zev Levin and Zifa Wang), Symposium A5: Mineral Dust Processes from Microphysical to Climate Scales, 2005 Scientific Assembly of the Interna-

tional Association of Meteorology and Atmospheric Sciences (IAMAS), Beijing, China, August 2–11, 2005.

SP4. Panel reviewer, NSF CISE SEI Program, GEO proposals. Arlington, VA, March 31–April 2, 2005.

SP3. Co-Convener (with Ron Miller), Session A05: Constraining the Global Mass Distribution of Mineral Dust Aerosol, Spring Meeting of the American Geophysical Union and Canadian Geophysical Union, Montreal, Canada, May 17–21, 2004.

SP2. Co-Chair (with Itsushi Uno), Session 5: Regional and global dust modeling: emission, transport, deposition and associated effects at the Second International Workshop on Mineral Dust, Paris, France, September 10–12, 2003.

SP1. Expert Reviewer, Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report (TAR), Working Group I Contribution. November, 2000.

AD HOC SERVICE AS MANUSCRIPT REVIEWER AND PROPOSAL REFEREE

SR2. Reviewed thirteen manuscripts and proposals between October 1, 2016 and September 30, 2019: GMD, MWR, NASA EXO, NSF GEO OPP ARC ANS, NSF GEO OPP ANT AGP,

SR1. Reviewed manuscripts and proposals for following agencies/programs and journals since career began: *Adv. Meteorol.*, *Atmos. Chem. Phys.*, *Atmos. Environ.*, *Atmos. Res.*, *Bull. Am. Meteorol. Soc.*, *Clim. Dyn.*, CRDF, DOE (ESM, RGCM: SciDAC & CVC Panels 2014, SciDAC SGER), *Deep-Sea Research II*, *Ecological Applications*, *Energy & Environmental Science*, *Eos* (Editorial Advisory Board), *Frontiers in Eco. Evol.*, *Geophys. Mod. Develop.*, *Geophys. Res. Lett.*, *Global Biogeochem. Cycles*, *Global Plan. Change*, *Int. J. Biometeorol.*, IPCC WG1 (TAR, AR4, AR5), IPEV, *J. Arid. Env.*, *J. Atmos. Ocean. Tech.*, *J. Atmos. Sci.*, *J. Climate*, *J. Environ. Qual.*, *J. Geophys. Res. Atmos.*, *J. Geophys. Res. Solid Earth*, KNMI, *Kuwait J. Sci. Eng.*, *Mar. Chem.*, *Mon. Weather Rev.*, NASA (ACRM, EOS: AC Panel 2007, ESDS SPG, EVI: EVI-3 Panel 2015, EXO, GMAP, IDS, NIP, MAP, MAP: CAR Panel 2008, RSP, TCP, UARP), *Nature*, *Nature Clim. Change*, NERC (UK), NOAA (OAR, OGP), NSF (CISE: IIS SEI/GEO Panel 2007; EAR: SEP GLD; GEO: AGS/ATM ACP, CHE, CLD, CPT Panel 2009, EaSM Panel 2010, LSD; OD: OIA CAREER, MRI, OISE IRES; OPP: AGP, ANS, ANS Panel 2018) *Proc. Natl. Acad. Sci.*, *Q. J. R. Meteorol. Soc.*, *Remote Sensing*, *Science*, SNSF, *Tellus*, *The Cryosphere*, USCCRP, USGCRP

PROFESSIONAL ON-LINE RESOURCES PRODUCED/MAINTAINED

SO7. Co-author: NetCDF Climate and Forecast (CF) Metadata Conventions, 2019–present.

SO6. Author/maintainer: Dust Entrainment and Deposition (DEAD) mineral aerosol model. 2002–present.

SO5. Author/maintainer: Freely Available Community Texts (FACTs). 1999–present.

(a) Radiative Transfer in the Earth System
(b) Natural Aerosols in the Climate System
(c) Particle Size Distributions: Theory and Application to Aerosols, Clouds, and Soils

SO4. Co-author/maintainer: NCAR CCM Column Radiation Model (CRM). 1996–present.
SO3. Author/maintainer: netCDF Operators (NCO). 1995–present.
SO2. Author/maintainer: Mineral Dust and Climate Bibliography (PDF). 1998–2012.
SO1. Author/maintainer: of Enhanced Absorption Bibliography (PDF). 1997–2012.

SERVICE TO UNIVERSITY (SYSTEMWIDE)

SU1. University of California (UC) Assembly of the Academic Senate, UCI Divisional Representative. AY 2010–12.

SERVICE TO CAMPUS

SC13. UCI Member Representative, University Corporation for Atmospheric Research (UCAR), AY 2002–present.
SC12. Lead, Octennial Membership Renewal for UCI in University Corporation for Atmospheric Research (UCAR), 2018.
SC11. Panel Reviewer, Provost Initiative on Understanding and Confronting Extremism, AY 2017-18.
SC10. Faculty Liaison, Study Abroad Center (SAC, formerly Center for International Education, CIE). AY 2008–17.
SC9. Co-Investigator, successful campus NSF MRI (CNS-1828779): "Acquisition of a High-Performance Computing Cluster for Research and Teaching at UC Irvine" for $571k HPC3 Cluster, AY 2016–18.
SC8. Panel Reviewer, Graduate Opportunity (GOF) Fellowships, UCI, Feb. 2015.
SC7. University of California Academic Senate, Divisional Senate Assembly, Member, UCI, AY 2002–2007, 2010–12.
SC6. Sustainability Tracking Assessment & Rating System (STARS), Ad Hoc Faculty Working Group on, Member, AY 2011–13.
SC5. Campuswide Honors Program (CHP), ESS Faculty Liaison. UCI, AY 2008–14.
SC4. Academic Senate Cabinet, Member. UCI, AY 2005–07.
SC3. Academic Senate Council on Student Experience (CSE), Chair. UCI, AY 2005–07.
SC2. Academic Senate Council on Student Experience (CSE), Member. UCI, AY 2004–05.
SC1. Academic Senate Committee on Courses, Member. UCI, AY 2001–04.

SERVICE TO SCHOOL

SS6. External Member, Search Committee for Exoplanetary Scientist, Dept. of Physics and Astronomy, UCI, 2/15–2/16
SS5. Achievement Rewards for College Scientists (ARCS) Scholarship Selection Panel, Member. School of Physical Sciences (SPS), UCI, 2012.
SS4. Communications Task Force, Member. SPS UCI, AY 2008–13.
SS3. Representative to Divisional Senate Assembly. SPS UCI, AY 2002–05.
SS2. Committee on Research, Member. SPS UCI, AY 2002–05.
SS1. Instructional Computing Committee, Member. SPS UCI, AY 2002–05.

SERVICE TO DEPARTMENT

SD16. Mentor, Faculty Mentor Program, AY 2018–present.

SD15. Speaker, ESS 191 Research Topics course, AY 2003–present.
SD14. Panel Member, graduate student comprehensive written and oral examinations, AY 1999–2018 (except 2008, 2019).
SD13. Lead, Global Physical Climatology course re-design committee, AY 2017-18
SD12. Diverse Educational Community and Doctoral Experience (DECADE) Graduate Program Mentor, 9/12–8/16.
SD11. Vice Chair of Graduate Studies. Earth System Science Department (ESS), UCI, AY 2010–13.
SD10. Chair, Graduate Admissions Committee. ESS UCI, AY 2010–13.
SD9. Physical Climate faculty search committee, Co-Chair. ESS UCI, AY 2011–12.
SD8. Technology Coordinator staff search committee, Co-Chair. ESS UCI, AY 2009–10.
SD7. Earth System Modeling Facility (ESMF), Director. ESS UCI, 2004–2009.
SD6. Abrupt Climate Change faculty search committee, Member. ESS UCI, AY 2005–06.
SD5. Course re-organization coordinator. ESS UCI, 2001–03.
SD4. Test of English Proficiency (TOEP), Grader. ESS UCI, F02, S10.
SD3. Seminar Coordinator. ESS UCI, AY 1999–00.
SD2. Astrophysical Planetary and Atmospheric Sciences (APAS) Department, University of Colorado at Boulder (CU): Founder/Director of APAS Help Center, a free tutoring center for undergraduates. 1992–1995.
SD1. Graduate student representative to United Government of Graduate Students (UGGS). APAS CU, AY 1991–93.

DIVERSITY ACTIVITIES

DA16. Panel Reviewer, Provost Initiative on Understanding and Confronting Extremism, UCI, AY 2017-18.
DA15. Participant, 9th ADVANCE Institute for Equity, Diversity and Inclusion, UCI, 9/2015
DA14. External Member, Search Committee for Exoplanetary Scientist, Dept. of Physics and Astronomy, UCI, 2/15–2/16 (hired UC President's Postdoctoral Fellow as Assistant Professor)
DA13. Reviewer, Graduate Opportunity Fellowships (GOF), UCI, Feb. 2015
DA12. Scientist Representative, http://www.math4science.org/meet-the-scientists3/charles-zender, 2014–present
DA11. Participant, 8th ADVANCE Institute for Equity, Diversity and Inclusion, UCI, 9/2014
DA10. Mentored Andrew Miller (NSF REU student from The College of New Jersey, NJ), 6/13–8/13
DA9. Participant, 7th ADVANCE Institute for Equity, Diversity and Inclusion, UCI, 9/2013
DA8. Panelist on "The Faculty Admissions Committee", Graduate Resource Center, UCI, June 26, 2013
DA7. Diverse Educational Community and Doctoral Experience (DECADE) Graduate Program Mentor, UCI ADVANCE Program, 9/12–8/16.
DA6. Participant, 6th ADVANCE Institute for Equity, Diversity and Inclusion, UCI, 9/2012
DA5. Collaborator with Aquarium of the Pacific (AOP) in Long Beach on successful NASA Competitive Program for Science Museums and Planetariums (CP4SMP) proposal "Our Instrumented Earth: Understanding Global Systems and Local Impacts through

the El Niño Story" (PI: Jerry Schubel), to teach the El Niño story at AOP and, personally, at professional development workshops for dozens of Title I (underpriveleged) K-12 teachers, 7/12–6/15.

DA4. Mentored Michelle Serino (NSF REU student from Millersville University, PA), 6/12–8/12.

DA3. Developed Science Communication & Outreach Course (ESS 280), AY 2011–13. Helps UCI graduate students prepare and coordinate presentations to Under-Represented Minority (URM) K-12 schools (e.g., Santa Ana, Compton).

DA2. As Academic Senate Council on Student Experience (CSE) Chair, AY 2005–07, led or moderated CSE contribution to diversity activities, including:

(a) Established CSE's sub-committee on the Minority Student Experience.
(b) Regular discussion of UCUES survey responses on campus diversity statistics.
(c) Incorporated consideration of diversity into Academic Senate CSE bylaws.
(d) Promulgated CSE recommendation to increase success rate of first-generation college students by instituting a mentoring program in undergraduate residence halls.

DA1. Presented "The Sun and Climate" to the UCI FOCUS (Faculty Outreach Collaborations Uniting Scientists, Students and Schools) program, Irvine, CA, August 1, 2005.

PUBLIC SERVICE & EDUCATION PRESENTATIONS

SE30. Presented "Air quality reduction due to the shrinking Salton Sea" to the Borrego Valley Endowment Fund public workshop, Steele/Burnand Anza-Borrego Desert Research Center, Borrego Springs, CA, February 27, 2018.

SE29. Presented "Climate Change: We Told You So" at East High School, Denver, CO, September 5, 2017.

SE28. Presented "Climate Change Challenges & Opportunities" at the Newport Beach Women's Democratic Club, Newport Beach, CA, May 16, 2017.

SE27. Presented "Long term air quality issues in the Salton/Borrego region" to the Borrego Valley Endowment Fund public workshop, Steele/Burnand Anza-Borrego Desert Research Center, Borrego Springs, CA, February 27, 2017.

SE26. Presented "How Geoengineering Affects Night Sky Visibility" to four El Dorado High School classes, Placentia, CA, January 10, 2017.

SE25. Presented "My Career Path" to a University High School assembly, Irvine, CA, April 14, 2016.

SE24. Presented "Climate Change in SoCal: Here. Now. Dude!" to the Newport-Irvine Rotary Club, Irvine, CA, July 2, 2015.

SE23. Presented "Satellites to Study the Earth" to the Osher Lifelong Learning Institute (OLLI), Irvine, CA, January 16, 2015.

SE22. Presented "Climate Change in SoCal: Here. Now. Dude!" to the Pacific Life Insurance Law Retreat, Huntington Beach, CA, May 13, 2013.

SE21. Presented "Radioactivity and Wind: The Menace and Promise of Air" to the Idyllwild Community Recreation Council Speaker's Series, Idyllwild, CA, January 18, 2012.

SE20. Presented "Radioactivity and Wind: The Menace and Promise of Air" to the University Club Forum, Irvine, CA, November 9, 2011.

SE19. Presented "Climate Change: A Southern California Perspective" to the Irvine Presbyterian Church, Irvine, CA, March 17, 2011.

SE18. Presented "How to Cool the Earth" (Video) to the Swiss-American Chamber of Commerce, Beverly Hills, CA, March 18, 2010.

SE17. Presented "Seeding a Cooler Climate with Ocean Winds, Waves, and Clouds" (Video) to the Aquarium of the Pacific, Long Beach, CA, September 9, 2009.

SE16. Presented "Our Sabbatical Year in France" to the Ferons/Maddens third grade class at Vista Verde Elementary School, Irvine, CA, March 27, 2009.

SE15. Presented "Climate Change: Idyllwild's Perspective" to the Idyllwild Community Recreation Council Speaker's Series, Idyllwild, CA, February 18, 2009.

SE14. Presented "Polar Warming: Impure as the Driven Snow" to the Aquarium of the Pacific, Long Beach, CA, August 13, 2007.

SE13. Presented "Pretty, Nasty, Weather" to the Vista Verde Elementary School first grade assembly, Irvine, CA, February 21, 2007.

SE12. Presented "Arctic Melt" to the Osher Lifelong Learning Institute (OLLI), Irvine, CA, October 31, 2006.

SE11. Presented "Sunlight, Clouds, and Climate" to the Osher Lifelong Learning Institute (OLLI), Irvine, CA, November 18, 2005.

SE10. Presented "The Sun and Climate" to the UCI FOCUS (Faculty Outreach Collaborations Uniting Scientists, Students and Schools) program, Irvine, CA, August 1, 2005.

SE9. Presented "The Scientific Consensus on Global Warming with a Southern California Perspective" to the Harbor Ridge Women's Club, Newport Beach, CA, February 23, 2005.

SE8. Presented "The Atmospheric Physics of Climate Change" to the Summer Science Program, Happy Valley School, Ojai, CA, July 17, 2004.

SE7. Presented "The Scientific Consensus on Global Warming" to the Unitarian Universalist Church of Orange County, Costa Mesa, CA, August 18, 2004.

SE6. Presented "Climate Change: A Southern California Perspective" to the Osher Lifelong Learning Institute (OLLI), Irvine, CA, February 27, 2003.

SE5. Presented "Climate Change: A Southern California Perspective" to the Regent's Point Retirement Community, Irvine, CA, February 2, 2003.

SE4. Presented "Climate Change: A Southern California Perspective" to the Dartmouth Alumni Association of Orange County, Irvine, CA, March 13, 2002.

SE3. Contributor to the Mathematics and Science Teachers Hotline (MAST) of the University of Northern Colorado, Greeley Colorado (800) 866-MAST. 1995–1999.

SE2. Cosmic docent for public open house sky nights. Sommers Bausch Observatory, University of Colorado at Boulder, 1991–1992.

SE1. Cosmic docent for public open house sky nights. Loomis-Michael Observatory, Harvard University, 1983–1984.